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**Mindfulness in Antenatal Classes:  
A Quasi-Experimental Pilot Study**

A thesis  
Submitted in fulfilment  
of the requirements for the degree  
of  
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## **Abstract**

Pregnancy is a major life transition, and entails high levels of change and uncertainty which, for some parents, can elicit anxiety and distress. Mindfulness practices may help people to cope with uncertainty and change. This study explores whether adding mindfulness to antenatal classes is acceptable and helpful for mothers and fathers, and whether participants use these skills during pregnancy, birth, and the early postnatal period. It also explores whether it is feasible to incorporate mindfulness into an existing comprehensive antenatal education curriculum.

The study compared the experiences of participants in two sets of antenatal classes with the same curriculum, except for the addition of a brief weekly mindfulness exercise and associated handout for one of the two groups. The two-hour classes were run over six weeks for pregnant women in their third trimester and their partners. Two separate trials were carried out consecutively – Trial A and Trial B. Trial A included 23 participants in the intervention group and 15 in the comparison group. Thirty-eight people were in the Trial B intervention group and 32 in the comparison group. However, practical barriers led to the Trial B intervention being minimally delivered and therefore data from Trial B were not analysed.

Pre-intervention and post-intervention questionnaires measured pregnancy-related anxiety, psychological distress, and mindfulness. Acceptability of the mindfulness intervention and satisfaction with the antenatal classes was measured post-intervention. Psychological distress, mindfulness, and overall birth experience were measured one-month postnatally.

Findings showed no statistically significant reductions in psychological distress or pregnancy-related anxiety for either group. There were also no significant increases in mindfulness. Although not statistically significant, participants in the mindfulness group may have had a slightly better birth experience; however, this is difficult to establish with certainty. People in the mindfulness group generally enjoyed the classes overall and reported having learned some useful skills; however, most did not practice mindfulness outside of class.

The results of this pilot study suggest that it may be feasible to incorporate mindfulness into typical antenatal classes if adaptations are made so that it can be more smoothly integrated into the existing curriculum. Further research is needed into the feasibility of mindfulness in antenatal classes using a mindfulness programme which addresses the challenges identified in this study. This may have implications for the potential inclusion of brief mindfulness interventions across a variety of health and social settings.

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## **Chapter 1: Introduction**

For many, pregnancy is an exciting time of transformation, joy, and anticipation about the future (Tyano, Keren, Herrman, & Cox, 2010). It can also be a time of uncertainty, fear, and distress for expectant mothers and their partners (Dunkel Schetter, 2011; Hildingsson, Haines, Karlström, & Nystedt, 2017; Røsand, Slinning, Eberhard-Gran, Røysamb, & Tambs, 2011). Untreated distress during pregnancy is associated with increased risk to the physical and mental health of mothers, and to the healthy development of babies (Cole-Lewis et al., 2014; Field, 2017; Glover, 2011).

Therefore, it is necessary to take advantage of all opportunities to improve wellbeing and provide support for families. Due to financial and time constraints, potential strategies to increase wellbeing should be brief, inexpensive, and easily incorporated into busy parents' lives (Da Costa, Zelkowitz, Nguyen, & Deville-Stoetzel, 2018; Goodman, 2009). They should also be non-pharmacological to avoid any potential detrimental effects to the mother and baby (Campagne, 2018; Muzik & Hamilton, 2016). As set out below, the literature suggests that the use of mindfulness is one strategy which may contribute to improved mental and physical health for families.

This quasi-experimental pilot study explores the feasibility and acceptability of a brief mindfulness activity incorporated into standard antenatal classes. It also examines the effectiveness of this intervention for improving the wellbeing of pregnant women and their partners.

## **Literature Review**

In this review, the literature about the prevalence and possible effects of distress during pregnancy will be summarised, as will research and clinical literature about awareness and detection of distress during pregnancy, and barriers to help-seeking. The use of mindfulness to improve wellbeing and reduce distress will be explored, looking at intensive and brief mindfulness interventions, and mindfulness interventions during pregnancy. Antenatal education in a New Zealand context and the current study will also be described.

### **Prevalence and Effects of Distress During Pregnancy**

Psychological distress during pregnancy is relatively common. According to Lederberg Stone et al. (2015), up to 58 percent of pregnant women suffer from perinatal stress. In their study of 5,395 pregnant women, they explored the relationship between stressful events and postnatal depression. Stressors were categorised into four groups: traumatic, partner-related, emotional, or financial. They found that perinatal stress (especially partner-related) was associated with increased risk of postnatal depression. Approximately 13 percent of pregnant women are affected by prenatal depression, although for ethnic minority groups this figure is closer to 20 percent (Shakeel et al., 2015). Prenatal anxiety affects between 21 and 25 percent of pregnant women (Field, 2017). While the experiences of fathers are not widely assessed, at least 10 percent of fathers experience difficulties with anxiety or depression during the perinatal period (O'Brien et al., 2017).

A New Zealand longitudinal study looked at depression symptoms in 5,664 pregnant women (Waldie et al., 2015). Symptoms of antenatal depression were assessed using the Edinburgh Postnatal Depression Scale. Results indicate that rates of prenatal depression in New Zealand may be almost 12 percent. Rates are higher for Maori, Pacific and Asian women, with prevalence estimated to be up to 24 percent depending on ethnicity (Waldie et al., 2015). These figures suggest that prenatal depression is relatively common in New Zealand.

There are no comparable studies of the incidence of significant anxiety or stress among pregnant women in New Zealand. However, Barber and Steadman (2018) explored the prevalence of distress during pregnancy in 93 pregnant New Zealand women. Questionnaires measuring depression, anxiety, stress, and perceived stress were completed and compared with those of 93 non-pregnant women, matched on age and education level. No significant differences in distress between the groups were found, suggesting that distress may not be higher in pregnant women than in non-pregnant women. Despite the two groups reporting similar levels of distress, however, 16 percent, 22 percent, and 31 percent of pregnant women reported experiencing moderate to severe stress, depression, and anxiety respectively. These figures indicate that while distress during pregnancy is not necessarily higher than at other times, it is still high enough to warrant intervention with the aim of increasing wellbeing.

Definitions of stress, anxiety, and depression vary across studies and contexts, and often these experiences are overlapping. However, a substantial number of pregnant women do appear to experience levels of distress that might have a significant impact on their wellbeing (Field, 2017; Lederberg Stone et al., 2015; Shakeel et al., 2015).

The research indicates that stress, depression and anxiety during pregnancy are associated with adverse maternal and infant outcomes. Psychological distress in pregnancy is associated with increased risk of preterm birth (Cole-Lewis et al., 2014; Ding et al., 2014; Field, 2017; Hedegaard, Henriksen, Sabroe, & Secher, 1993; Ruiz, Fullerton, Brown, & Dudley, 2002; Wadhwa, Entringer, Buss, & Lu, 2011), pre-eclampsia (Bonari et al., 2004; Pittman Hernández, 2016), and child psychological and behavioural problems (Field, 2011; Glover, 2011; O'Connor, Heron, Golding, & Glover, 2003; Van den Bergh, Mulder, Mennes, & Glover, 2005).

According to a review by Field (2011), antenatal depression is associated with foetal growth delays, premature birth, low birth weight, infant sleep difficulties, and reduced infant reactivity to stimuli. Babies born to depressed mothers are at increased risk of having a difficult temperament. Children of antenatally depressed mothers are at higher risk of emotional, behavioural, and attentional problems. They are also at increased risk of developing chronic illness in adulthood (Field, 2011).

A review by Gragnic-Philippe, Dayan, Chokron, Jacquet, and Tordjman (2014) looked at the association between antenatal stress and obstetric complications, birth outcomes, and foetal and child development. Stress during pregnancy is significantly associated with increased risk of poor birth outcomes (particularly premature birth or low birthweight) and obstetric difficulties (especially pre-eclampsia or caesarean). There is also a positive relationship between antenatal stress and children's internalising and externalising behavioural problems (Gragnic-Philippe et al., 2014).

Field (2017) conducted a review which explored the effects of prenatal anxiety on physical and mental health outcomes for mothers and babies. The

intention was to examine the effects and prevalence of prenatal anxiety and to highlight the importance of developing strategies to reduce it. Forty-four studies were included in the review.

The results show that prenatal anxiety is associated with increased risk of adverse maternal effects, including increased cortisol and inflammation, hypertension, obstetric difficulties, and caesarean section (Field, 2017). For the newborn, there is a greater risk of premature birth, lower gestational age, reduced exclusive breastfeeding, and decreased self-regulation during the heel stick process. The effects of prenatal anxiety continue into infancy and childhood, with physiological risks including reduced vagal activity in the first two years, decreased immunity, and more frequent childhood illnesses. Psychological and cognitive risks include greater negative emotionality and lower developmental scores in infants, and increased anxiety and internalising behaviours during childhood and adolescence.

Overall, therefore, the literature suggests that distress during pregnancy is a concerning issue due to the potential for it to increase the risk of serious adverse outcomes for both mothers and children.

## **Barriers to Seeking Help**

Despite distress during pregnancy being relatively common, many women do not seek assistance to reduce their distress. In a large study of 3,472 pregnant women in the United States of America (USA), Marcus, Flynn, Blow, and Barry (2003) found that 20 percent reported significant symptoms of depression. Of these, 86 percent did not receive any treatment. The authors concluded that, while most women receive some type of antenatal care during their pregnancy, many do not seek assistance for depression.

Flynn, Blow, and Marcus (2006) reported similar results from their study which explored the rates of treatment for depression accessed by pregnant women in the USA. In their study of 276 pregnant women at high risk of depression, they found that two-thirds of pregnant women with depression do not receive adequate mental health treatment during pregnancy. Therefore, despite many women experiencing distress during pregnancy, few receive appropriate treatment to improve their wellbeing. It seems pertinent, therefore, to understand why women tend to refrain from seeking mental health care and what barriers exist to help-seeking.

Da Costa et al. (2018) explored perceived barriers to mental health help-seeking behaviours of pregnant women in Canada during the antenatal period. Of 652 first-time mothers, 115 (17.6 percent) reported that during the previous 12 months they had felt a need to seek mental health care for emotional distress, but had not sought assistance. The most common reasons were that they never got around to it (46 percent) and they were too busy (26 percent). Some women simply decided not to seek help (24 percent) and some were deterred by the cost (22 percent). Nineteen percent of women did not know where to access appropriate assistance and 13 percent felt they would have to wait too long. This was the case despite Canada having universal health coverage (Da Costa et al., 2018). The authors concluded that innovative approaches to mental health care are needed which address these barriers in order to improve wellbeing in the perinatal period.

Similar outcomes were found in a study by Goodman (2009) who explored barriers to pregnant women in the USA seeking help for depression. From a sample of 509 women, 121 (24 percent) felt they needed assistance for depressive symptoms during their pregnancy. The most common perceived barriers to



seeking help were insufficient time (65 percent), stigma around mental illness (43 percent), and childcare difficulties (33 percent). Other barriers were not knowing where to access appropriate treatment (26 percent) and not being able to afford the cost (18 percent). Preferred treatments for depression included individual psychotherapy (72 percent) and medication (7 percent). However, most women considered medication inappropriate during pregnancy (66 percent) or whilst breastfeeding (64 percent) due to concerns about risk to the baby.

These studies indicate that, despite many pregnant women feeling they need mental health support, there are a number of barriers preventing them from seeking help. The most common barriers include lack of time, stigma, cost, childcare issues, and not knowing where to access suitable treatment. The provision of strategies in antenatal classes to increase wellbeing in new parents may help to address some of these barriers.

### **Mindfulness to Improve Wellbeing and Reduce Distress**

There is some evidence that mindfulness may be an effective tool to increase wellbeing and reduce distress in both clinical and non-clinical populations.

Mindfulness is defined by Kabat-Zinn (2003) as, “...the awareness that emerges through paying attention on purpose, in the present moment, and non-judgmentally to the unfolding of experience moment by moment” (p. 145).

An overview is provided below of the evidence about mindfulness programmes for broad-based groups, looking at both intensive and brief interventions. This is followed by a more specific focus on the use of mindfulness during pregnancy.

### **Intensive mindfulness-based interventions**

Lomas, Medina, Ivtzan, Rupprecht, and Eiroa-Orosa (2018) conducted a systematic review and meta-analysis of the effectiveness of mindfulness-based interventions (MBIs) for improving wellbeing within the workplace. They examined studies using a range of wellbeing related variables, both asset and deficit-based. Asset-based measures included compassion/empathy, emotion regulation, job performance, physical health, mindfulness, and positive wellbeing (resilience, life satisfaction, and positive affect). Deficit-based measures were burnout, stress, anxiety, depression, and distress. Thirty-five randomised controlled studies were included in the meta-analysis, comprising a total sample of 3,090 participants.

The meta-analysis found that MBIs had a positive effect on most outcomes measured, although there was substantial variation in effect sizes (Lomas et al., 2018). The most significant effects were seen with distress, anxiety, stress, and health. Small to medium effects were found with depression, burnout, job performance, mindfulness, compassion/empathy, and positive wellbeing. There were no effects on emotion regulation. The authors concluded that MBIs may help to improve health, wellbeing and job performance, and reduce distress.

Studies included in the Lomas et al. (2018) review varied in terms of types of MBIs and intensity of the interventions; however, many were based on typical intensive MBIs such as Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT). MBSR was developed by Kabat-Zinn (1982) originally to reduce suffering associated with chronic pain. The MBSR model was later extended to include other conditions related to physical and mental distress; for example, including anxiety and stress (Kabat-Zinn, 2003).

MBCT was developed by Segal, Williams, and Teasdale (2002) to help prevent relapse of treatment-resistant depression and incorporates elements of Cognitive-Behaviour Therapy (CBT) and mindfulness. MBSR and MBCT usually involve weekly classes of two hours' duration over eight weeks, a full day retreat, and homework practice (Carmody & Baer, 2009; Metcalf & Dimidjian, 2014).

Three meta-analyses have looked at the effectiveness of various mindfulness-based interventions with clinical populations experiencing anxiety and stress-related disorders (de Abreu Costa, D'Alò de Oliveira, Tatton-Ramos, Manfro, & Salum, 2018), and anxiety and mood disorders (Rodrigues, Nardi, & Levitan, 2017; Vøllestad, Nielsen, & Nielsen, 2012). The interventions in these studies were intensive; they were generally of eight weeks duration, with weekly classes of 2-3 hours. These studies have consistently found that MBIs reduce psychological distress and increase wellbeing in clinical populations. However, research is generally limited by small sample sizes and lack of active control groups.

### **Brief mindfulness-based interventions**

Whilst the literature suggests that relatively intensive mindfulness-based interventions can help reduce distress and improve wellbeing in clinical and non-clinical populations, little research has been conducted into the effects of brief mindfulness interventions. This is despite the concept of mindfulness becoming more widely known due to its recent proliferation in popular culture and presence in social media, magazines, podcasts, and websites (Herbert & Brandsma, 2015).

Lane, Seskevich, and Pieper (2007) were concerned at the accessibility of MBSR and other meditation-based programmes, due to their expense and lengthy time requirements, which would preclude some people from attending. They were

also concerned about the acceptability of these programmes for some individuals, given their religious foundations. Their USA study explored whether a relatively brief secular meditation training would be sufficient to reduce perceived stress and low mood. A single group, pre-test, post-test design was used with 192 participants interested in learning meditation. Outcome measures were negative mood, perceived stress, anxiety, and psychological distress. Participants received training in four sessions of one-hour duration over two weeks and were instructed to practice their mantra meditation for 15-20 minutes twice daily for the duration of the three-month study.

Significant reductions were found in all four outcome measures (Lane et al., 2007). Meditation practice frequency was positively associated with lower post-intervention levels of negative mood, perceived stress, and anxiety, suggesting that regular practice is related to better outcomes. The results suggest that a brief, secular, meditation training programme may be a useful and inexpensive way to reduce stress and anxiety for individuals who are open to learning meditation. However, the lack of a control group was a limitation for this study. Also, while this study was relatively brief in comparison to mindfulness-based interventions such as MBSR or MBCT, it did require a greater time commitment for meditation than other studies described below. Furthermore, participants enlisted as they were interested in learning how to meditate, so it is not clear whether this type of programme would be acceptable and useful to a broader audience.

In the United Kingdom (UK), Cavanagh et al. (2013) explored the impact of a brief online mindfulness intervention on stress, anxiety, depression, and overall mindfulness. The researchers employed a randomised, wait-list control, pre-test, post-test design. Participants included 104 university students (92 female,

12 male) who were randomly assigned to the intervention group ( $n = 54$ ) or the wait-list control group ( $n = 50$ ) after completion of baseline measures of mindfulness, stress, depression, and anxiety. The intervention condition received access to a two-week online mindfulness course provided by the university. The intervention included information about mindfulness and what to expect, a choice of daily 10-minute guided meditations, and a daily journal for reflections. Participants in the control condition received access to the intervention two weeks later. Post-test questionnaires were completed following the intervention. A high attrition rate resulted in 58 participants (52.3 percent) completing pre- and post-intervention questionnaires, with 23 in the mindfulness condition and 35 in the control condition completing both measures.

The results showed a significant increase in mindfulness over time for the intervention group, but not the control condition (Cavanagh et al., 2013). While there was no change in stress for the control group, stress was significantly reduced in the intervention group. Anxiety and depression significantly decreased in the intervention group, but not the control group. Increased mindfulness in the intervention condition was significantly associated with decreased stress, anxiety, and depression. Limitations include the high attrition rate and relatively small and homogenous sample. Overall, despite the high attrition, an intention to treat analysis indicated that the brief online mindfulness intervention increased mindfulness and decreased symptoms of stress, anxiety, and depression in a non-clinical student population. However, participants in this study were recruited specifically for a mindfulness-based programme and therefore chose to participate on the understanding that they would be practicing mindfulness.

Replicating and extending the Cavanagh et al. (2013) study, Cavanagh et al. (2018) explored the effects of two brief mindfulness interventions compared

with a wait-list control condition in a non-clinical sample in the UK. Participants were 155 university students and staff who were randomly assigned to a wait-list control, a mindfulness condition with formal meditation practice, or a mindfulness psychoeducation condition without meditation. Both mindfulness conditions received two-week access to a self-guided online intervention (duration not specified) provided by the university. This included information about mindfulness, advice on how to incorporate mindfulness into daily life (informal practice), and a reflection journal. The formal practice condition also received 10-minute guided meditation recordings to practice daily. Prior to randomisation, all participants completed baseline questionnaires measuring mindfulness, perceived stress, perseverative thinking, depression and anxiety, and previous meditation experience.

Significant improvements were found in mindfulness, perceived stress, perseverative thinking, depression, and anxiety in both mindfulness intervention conditions, with no significant between group differences (Cavanagh et al., 2018). There were no significant changes found in the control condition for any of the outcome measures. Limitations of this study include the relatively high attrition rate and the homogenous university sample of mainly female (80%) participants. Overall, the results from this study suggest that a very brief online mindfulness intervention (with or without formal meditation practice) may reduce psychological distress and improve mindfulness in a non-clinical population.

Overall, the literature suggests that mindfulness may help to increase wellbeing in preventative studies in the general population.

## **The Research on Mindfulness Interventions During Pregnancy**

There is developing literature on the effects of mindfulness during pregnancy. A systematic review and meta-analysis carried out by Dhillon, Sparkes, and Duarte (2017) explored the effectiveness of mindfulness-based interventions during pregnancy. They aimed to examine whether mindfulness interventions in pregnancy would have an effect on mindfulness and psychological distress. Fourteen studies were reviewed, seven of which were randomised-controlled trials (RCTs).

The pooled results from the RCTs showed improvements in anxiety, perceived stress, and depression, although they were not statistically significant (Dhillon et al., 2017). These results should be interpreted in light of the limited number of RCTs, the small sample sizes, and heterogeneity of interventions. Moreover, the RCTs were feasibility or pilot studies, or insufficiently powered to adequately establish the effectiveness of a mindfulness intervention. Effect sizes were not examined in this review.

Pooled results from the non-RCTs showed significant reductions in perceived stress, anxiety, and depression (Dhillon et al., 2017). These results should also be considered in the context of the research limitations, including the small sample sizes and lack of comparison groups.

Consistent increases in mindfulness were found in both the RCTs and non-RCTs, suggesting that participation in a mindfulness-based intervention may result in improved awareness of the present moment (Dhillon et al., 2017). The authors concluded that mindfulness-based interventions in pregnancy may help to reduce psychological distress and increase mindfulness. However, the nature of the interventions explored in this review were varied. While most studies involved

weekly two-hour classes of 7-9 weeks duration, one was a brief three-week online intervention (Matvienko-Sikar & Dockray, 2017); therefore, there was some inconsistency in the types of interventions covered in this review. Overall, there is insufficient evidence available from which to draw definitive conclusions and further robust research is warranted in this area.

One study which focused on integrating mindfulness into antenatal education was a pilot study by Duncan and Bardacke (2010) in the USA. They looked at the effectiveness of a mindfulness-based antenatal programme for improving wellbeing. They developed a Mindfulness-Based Childbirth and Parenting (MBCP) course which aims to reduce the impact of pregnancy and birth-related stress through mindfulness meditation integrated with antenatal education, thus improving the wellbeing of families. The study employed an observational mixed-method design, with participants including 35 pregnant women and their partners. Self-report questionnaires were completed at pre- and post-intervention. Qualitative data was also collected about pregnancy, birth, and early parenting experiences.

The course ran over nine weeks, with one session each week of three hours duration (Duncan & Bardacke, 2010). Participants committed to meditation homework practice of 30 minutes a day, six days a week for the duration of the course, using a CD with guided meditations. There was also a seven-hour silent retreat and a postnatal reunion session following birth. Quantitative outcome measures included perceived stress, pregnancy-related anxiety, positive and negative affect, mindfulness, depression, and coping. Due to attrition and missing data, results from 27 women were included in the final analysis. While partners were included in the research, only the mothers' data was reported by the authors (the reasons for which were not stated).



The results showed large effect sizes and significant improvements in pregnancy-related anxiety, mindfulness, and nonreactivity (Duncan & Bardacke, 2010). Intensity and frequency of positive affect showed modest improvements. Qualitative and quantitative data suggest that, following intervention, MBCP participants applied mindfulness at times of increased stress, both antenatally and postnatally. Limitations of this study include its small sample size, self-selected participants, and lack of control group. However, despite these limitations, the large effect sizes and significant improvements in anxiety and mindfulness suggest that the intervention may be useful for improving wellbeing during pregnancy.

Byrne, Hauck, Fisher, Bayes, and Schutze (2014) extended the Duncan and Bardacke (2010) research by conducting a pilot study in Australia into the feasibility and efficacy of an antenatal group intervention using an integrated mindfulness meditation and empowerment education model. The authors developed Mindfulness-Based Childbirth Education (MBCE) for this study, which is a skills-focussed antenatal programme combined with MBSR. They were interested in the acceptability of the intervention and its effectiveness for reducing childbirth fear and increasing maternal self-efficacy. A single group repeated measures design was used, with participants completing questionnaires at baseline, following the final class, and 3-12 weeks postnatally. Outcome measures included birth outcome expectations, stress, anxiety, depression, mindfulness, and fear of childbirth. The course ran for eight weeks, with each session of 2.5 hours duration once a week. Participants included 18 pregnant women. Due to missing data, the results from 12 participants were included in the final analysis.

Post-test measures showed significant increases in participants' self-efficacy with a large effect size ( $d = 1.91$ ) and significant decreases in fear of

childbirth ( $d = 1.71$ ) (Byrne et al., 2014). While not statistically significant, improvements with medium effect sizes were observed for positive expectations for childbirth ( $d = -.75$ ), mindfulness ( $d = -.52$ ), anxiety ( $d = .48$ ), and depression ( $d = .47$ ). Qualitative data suggests that participants felt they benefited from the programme overall and enjoyed the mindfulness practice in class, although some found the daily meditation homework arduous. The authors concluded that incorporating a mindfulness component into a standard skills-based antenatal education programme is both feasible and acceptable. However, this study is limited by its small sample size, self-selected participants, and lack of control group, rendering it impossible to ascribe the outcomes to the intervention.

Most relevant to the current study, Beattie, Hall, Biro, East, and Lau (2017) carried out a randomised controlled pilot study using mixed methods to explore the feasibility and acceptability of a mindfulness-based programme with pregnant women. They were also interested in whether mindfulness would reduce depressive symptoms and stress, and increase present moment awareness. Participants were pregnant women recruited from an Australian tertiary health and maternity services provider randomly assigned to an intervention group ( $n = 24$ ) or active control group ( $n = 24$ ). All participants received regular antenatal care, with similar topics covered in both groups.

The intervention group, Mindfulness in Pregnancy Programme (MiPP), included standard antenatal education content, as well as experiential activities to increase awareness, mindfulness, compassion, acceptance, and connection. For example, ice meditation, body scan, mindful movement, and mindfulness of breath (Beattie et al., 2017). Participants in the MiPP were encouraged to practice formal and informal mindfulness activities at home during the week. The control group, Pregnancy Support Program (PSP), received a regular antenatal class

without the mindfulness component. The classes were carried out once a week over eight weeks, with each class of two hours duration.

Measures of perceived stress, depressive symptoms, and mindfulness were taken at three times – prior to the first class, immediately after the last class, and six weeks following the program's completion (Beattie et al., 2017). Childbirth experiences were measured following the birth. Qualitative data on participants' experiences of the classes was collected following the last class. An interview was also conducted by telephone six weeks after the final class.

The results showed no significant between-group differences for mindfulness, depressive symptoms, or perceived stress over the three time periods (Beattie et al., 2017). Within-group analyses showed some reductions in stress and depression for both groups at post-intervention, which was not sustained at follow-up. Mindfulness increased in both groups at post-intervention and increased further at follow-up for the intervention group, but not the control group. No significant differences were found for childbirth experience. Women in the intervention group wanted more classes of longer duration to continue their mindfulness learning, whereas the control group participants suggested classes of shorter duration (e.g. 1.5 hours). Therefore, the feasibility and acceptability of the mindfulness-based programme for pregnant women was confirmed in this study.

One of the major limitations in this study was the high rate of attrition (62.5 percent), with approximately half of the participants withdrawing from the study prior to the first class (mostly due to tiredness or illness). Only nine women in the intervention group and 11 in the control group completed the final follow-up measures, resulting in insufficient power to detect statistically significant differences (Beattie et al., 2017).

A recent Australian study by Townshend, Caltabiano, Powrie, and O'Grady (2018) explored the effectiveness of a mindfulness-based parenting programme for reducing anxiety, stress, and depression in pregnant women. They used a quantitative within-group repeated measures design to examine the effects of the Caring for Body and Mind in Pregnancy (CBMP) programme. CBMP is a mindfulness parenting programme based on MBCT and adapted for pregnancy. Participants were a convenience sample of 109 pregnant women at risk for perinatal anxiety and depression recruited from an existing dataset from an Australian hospital. Participants attended CBMP classes once a week for eight weeks and were prescribed 30 minutes of daily homework practice. Measures were taken of anxiety, stress, depression, self-compassion, and mindfulness at pre- and post-intervention.

The results showed significant reductions in depression, anxiety, and stress, with significant increases in self-compassion and mindfulness, and moderate to strong effect sizes (Townshend et al., 2018). However, a limitation of this study is the lack of a comparison group, making it difficult to conclude that changes were due to the intervention. A further limitation is participant self-selection, limiting generalizability of the results to a broader population.

As set out above, some studies have explored the effects of using mindfulness-based interventions to help improve wellbeing and reduce distress in pregnant women. However, most of the research conducted to date uses small samples and few utilise randomized controlled designs. Furthermore, a high attrition rate compromises the data and generalizability of the results. However, from the studies carried out so far, it appears there is potential for mindfulness to be useful in supporting wellbeing during pregnancy, with a few studies suggesting that it can be usefully incorporated into antenatal education.

While the research conducted to date relating to mindfulness in pregnancy looks promising, it is in the context of specific and intensive mindfulness-based interventions targeted at audiences who have enrolled for mindfulness antenatal classes. Generally, participants deliberately sign up for an antenatal class in which mindfulness is a central component; therefore, they are likely to have some understanding of, or experience with, mindfulness. The mindfulness component is generally in-depth and the courses often include homework practice. To our knowledge, there is no published research on brief mindfulness interventions incorporated into standard antenatal classes with participants who may or may not have any prior experience with mindfulness.

### **Antenatal Education in New Zealand**

Antenatal classes in New Zealand provide prospective new parents with comprehensive education around pregnancy, labour, childbirth, and how to care for a new baby (Ministry of Health, 2017). For example, new parents learn how to eat well and stay active, prepare for labour and birth, and prepare the home for a new baby. They also learn about the stages of labour and managing pain, breastfeeding, and settling baby for sleep (amongst other skills). Classes typically run for 6-8 weeks and are generally of two hours duration.

Eighty percent of first-time parents in New Zealand attend antenatal classes during the latter part of pregnancy (Dwyer, 2009). Due to the high proportion of expectant parents attending antenatal classes and their expectations of being taught useful skills, antenatal classes present an ideal opportunity to deliver a brief mindfulness intervention to new parents. However, as 20 percent of new parents do not attend antenatal classes (Dwyer, 2009), it is acknowledged that not all will be reached through this channel.

## **The Current Study**

This pilot study used a quasi-experimental design with intervention and comparison groups to explore the feasibility, acceptability, and effectiveness of mindfulness incorporated into standard antenatal education classes. Data were collected from both parents in this study.

There is a lack of research exploring brief mindfulness interventions incorporated into standard antenatal classes where participants have not enrolled into a specific and intensive mindfulness-oriented programme. The current study sought to address this gap in the literature.

The main aims of this study were to:

1. Evaluate whether participants find mindfulness to be an acceptable component of standard antenatal classes.
2. Assess the effects of the mindfulness intervention on wellbeing, mindfulness, and experience of childbirth.
3. Evaluate whether it is feasible to include mindfulness in standard antenatal classes.

The feasibility, effectiveness, and acceptability of mindfulness being incorporated into a standard antenatal education curriculum will have implications for the potential inclusion of brief mindfulness interventions across a variety of health and social settings.

## Chapter 2: Method

This study used a quasi-experimental design to compare satisfaction and psychosocial outcomes of antenatal classes with and without a brief mindfulness component.

### Participants

Participants were recruited for this study from people attending privately-funded antenatal classes at a birthing centre in Hamilton. Two sets of concurrent antenatal classes were run on Tuesday and Wednesday nights for six weeks. The lead researcher attended the beginning of the first antenatal class of the six-week course on Tuesday and Wednesday nights. All attendees at each antenatal class were invited to participate in the research.

This study was run from August 2018 through to March 2019. During this time, two sets of antenatal classes were conducted, the first being Trial A and the second, Trial B. In Trial A, the Tuesday night class was randomly selected as the intervention group and the Wednesday night class as the comparison group.

Twenty-three participants were recruited from the Tuesday night class, from a group of 24 attendees. Fifteen people were recruited from the Wednesday night class, from a group of 18. Class attendees were all couples, but participants were enrolled in the study individually so that one or both members of each couple could participate. Trial A intervention group participants included 12 pregnant women and 11 partners. Participants in the Trial A comparison group were eight pregnant women and seven partners.

In Trial B, the Tuesday night class was the comparison group, and the Wednesday class was the intervention group. Thirty-two participants were

recruited from the Tuesday class, from a group of 38 people. All 38 attendees at the Wednesday night class agreed to participate in the research. Trial B intervention group participants were 19 pregnant women and 19 partners. The comparison group included 17 pregnant women and 15 partners. Brief demographic information for the participants is set out in Table 1.

The overall mean age of participants for the whole sample recruited was 31. Seventy-seven percent of participants identified as New Zealand European, with 31 percent identifying as Māori, Indian, Australian, Chinese, or Other (Dutch, Japanese, South-East Asian, Hispanic, American, South African, other European). In terms of education level, 60 percent of participants attained an undergraduate degree or higher. (Refer to Table 1 for further demographic details.)



**Table 1***Participant Demographics*

Characteristic	Trial A		Trial B	
	MG	CG	MG	CG
	<i>n</i> = 23 <i>n</i> (%)	<i>n</i> = 15 <i>n</i> (%)	<i>n</i> = 38 <i>n</i> (%)	<i>n</i> = 32 <i>n</i> (%)
Gender				
Female	12 (52)	8 (53)	19 (50)	17 (53)
Male	11 (48)	7 (47)	19 (50)	15 (47)
Age*				
20-30	12 (52)	8 (53)	21 (55)	13 (41)
31-41	11 (48)	7 (47)	17 (45)	17 (53)
Ethnicity**				
NZ European	13 (57)	13 (87)	31 (82)	26 (81)
Māori	3 (13)	1 (7)	2 (5)	3 (9)
Indian	3 (13)	0 (0)	3 (8)	2 (6)
Chinese	2 (9)	0 (0)	0 (0)	0 (0)
Other	4 (17)	2 (13)	6 (16)	3 (9)
Highest education level <sup>°</sup>				
No formal qualifications	0 (0)	0 (0)	1 (3)	1 (3)
High/secondary school diploma	2 (9)	4 (27)	6 (16)	8 (25)
Some tertiary/university classes	3 (13)	4 (27)	5 (13)	6 (19)
Undergraduate degree	7 (30)	4 (27)	7 (18)	8 (25)
Post-graduate degree	11 (48)	3 (20)	17 (45)	9 (28)
Previous antenatal class experience <sup>°°</sup>				
Yes	0 (0)	1 (7)	1 (3)	2 (6)
No	23 (100)	14 (93)	37 (97)	29 (91)
Previous mindfulness meditation experience <sup>&gt;</sup>				
Yes	7 (30)	7 (54)	10 (26)	12 (55)
No	16 (70)	6 (46)	28 (74)	10 (45)

*Note.* MG = Mindfulness Group; CG = Comparison Group.

\* Two participants in the Trial B comparison group did not respond to the question asking their age.

\*\* Some participants selected multiple ethnicities.

<sup>°</sup> Two participants in the Trial B mindfulness group did not respond to the question asking about their highest educational level.

°° One participant in the Trial B comparison group did not respond to the question asking whether they had previously attended antenatal classes.

▷ Mindfulness group participants were asked about their previous mindfulness experience in the first questionnaire, whereas the comparison groups were asked in the final questionnaire. Therefore, the sample sizes for the comparison groups at this time were smaller due to attrition.

## **Study Design**

This study employs a quasi-experimental pre-, post- and follow-up design.

Participants elected to attend either the Tuesday or the Wednesday classes based on their own preferences; therefore, they were not randomly assigned to either the intervention or comparison group. However, at the time of deciding which class to attend, they were unaware that they would be asked to participate in this research or that there would be a mindfulness exercise offered in one of the classes.

Therefore, they were not self-selected into the mindfulness group classes. This provides a test of whether this content is acceptable to the typical user of this service. Questionnaires were completed pre-intervention, post-intervention, and approximately one month postnatally.

## **Ethical Considerations**

The proposed research was reviewed and approved by the University of Waikato Human Research Ethics Committee (Health) prior to recruitment of participants.

The lead researcher explained the study to all potential participants in each group at the beginning of the first antenatal class. It was explained to participants in the mindfulness group that some relaxation and mindfulness exercises would be offered at the end of each class and that it was hoped to get their feedback on the activities. It was emphasised that this was an optional component of the classes, but we were interested in their feedback to explore how antenatal education could

help to improve the wellbeing of new parents. The researcher also explained that people did not have to be involved in the study in order to participate in the mindfulness exercises.

With the comparison group, the researcher simply explained that the aim of the research was to explore how antenatal education could help to improve the wellbeing of new parents. The mindfulness component of the intervention class was not disclosed to the comparison group to avoid the potential for participants to behave differently as a result of feeling as though they were missing out on something special that the other class were receiving.

An opportunity was provided for the researcher to answer any questions about the project. Information sheets were given to all attendees outlining the goals of the research. The information sheet for the intervention group is attached as **Appendix A**. The comparison group information sheet is attached as **Appendix B**. The voluntary nature of participation in the research was explained by the researcher and participants signed consent forms (refer to **Appendix C**).

The researcher explained that each participant would be given an ID number and for confidentiality reasons names and ID numbers would be kept with the consent forms in a separate file from the data that was collected. This was to prevent participants' identifying information being matched with data provided on the questionnaires.

## **Setting**

The antenatal classes were held in the standard antenatal classroom at a birthing centre in Hamilton. The room was equipped with chairs, cushions, bean bags, and Swiss balls, so that pregnant women and their birth partners could be comfortable.

An antenatal education provider with 16 years' experience taught the classes and guided the mindfulness activities.

## **Measures**

The questionnaires used in this study (refer to **Appendix D**) contained questions relating to general demographics, previous mindfulness experience, antenatal class satisfaction, mindfulness satisfaction, mindfulness practice, mindfulness skills and future use, pregnancy-related anxiety, psychological distress, and mindfulness. The questionnaires completed postnatally also included questions about the overall childbirth experience. The measures incorporated into the questionnaires are presented below.

### **Previous mindfulness experience**

The pre-intervention questionnaire completed by the mindfulness group participants contained a question asking whether they had ever practiced mindfulness meditation. This question was asked of comparison group participants in the follow-up questionnaire.

### **Antenatal class satisfaction**

In the post-test questionnaire, mindfulness and comparison group participants were asked five questions to assess their satisfaction with the antenatal classes overall. For example, "I felt welcome in the antenatal classes" and "I felt comfortable in the antenatal classes" (see **Appendix D**). Responses were rated on a five-point scale, ranging from, "Not at all" to "Very much." Participants were also asked to comment on what they liked most and least about the classes and to provide any suggestions.

### **Mindfulness satisfaction**

In the post-intervention questionnaire, mindfulness group participants were asked four questions regarding their satisfaction with the mindfulness component of the antenatal classes. For example, “How appropriate do you think mindfulness is as an addition to antenatal classes?” and “How comfortable were you practicing mindfulness meditation in class?” (refer to **Appendix D**). Responses were rated on a four-point scale, ranging from, “Not at all” to “Very much.” They were also asked to provide comments on any of their responses.

### **Mindfulness practice**

Mindfulness group participants were asked in the post-intervention questionnaire whether they practiced mindfulness meditation at times other than in antenatal classes. In the follow-up questionnaire, they were asked whether they had practiced meditation since completing antenatal classes.

### **Mindfulness skills and future use**

In the post-intervention questionnaire, mindfulness group participants were asked whether they thought that learning about mindfulness had provided them with any useful skills they could use in the future, and if so, to comment on what they were. Dichotomous yes/no categories were used. They were also asked in the follow-up questionnaire whether they thought that mindfulness was something they would use in the future, with a yes/no/maybe response set.

### **Pregnancy-Related Anxiety Scale**

Anxiety was assessed using a pregnancy-related anxiety scale (PRAS) designed to measure anxiety specific to pregnancy and childbirth (Rini, Dunkel-Schetter,

Wadhwa, & Sandman, 1999). This scale was utilised as pregnancy-related anxiety has been found to more accurately predict birth outcomes than general anxiety (Kramer et al., 2009; Lobel et al., 2008). The PRAS is considered a reliable measure of pregnancy-related anxiety, with adequate internal consistency (Cronbach's  $\alpha = .78$ ) (Rini et al., 1999).

The PRAS is a 10-item scale which assess participants' anxiety about labour, delivery, their (or their partner's) health, their baby's health, and caring for a baby. A four-point scale measures responses ranging from 1 (Not at all) to 4 (Very much).

The wording of some PRAS items was slightly modified for this study to make it relevant for birth partners. For example, where the original scale for mothers states, "I am confident of having a normal childbirth," the modified version for partners states, "I am confident of my partner having a normal childbirth."

### **Depression, Anxiety, and Stress Scale**

The Depression, Anxiety, and Stress Scale (DASS) was originally developed as a 42-item scale to measure elements of psychological distress (Lovibond & Lovibond, 1995). The shorter 21-item version (DASS-21) developed by Antony, Bieling, Cox, Enns, and Swinson (1998) was used in this study. The DASS-21 is considered an appropriate alternative to the DASS-42, with acceptable to excellent internal consistency reliability and concurrent validity (Antony et al., 1998). The total score, which is the sum of all three subscales, was used to measure distress in this study.

Items on the DASS-21 are rated on a four-point scale, ranging from 0 (Did not apply to me at all) to 3 (Applied to me very much or most of the time). It

includes statements to measure depression, anxiety and stress. For example, “I found it hard to wind down” and “I felt that I had nothing to look forward to.” Participants are asked to rate how much the statement applied to them during the previous week.

### **Five Facet Mindfulness Questionnaire**

The Five Facet Mindfulness Questionnaire (FFMQ) was used to measure mindfulness. The FFMQ is widely used in research to measure change in mindfulness before and after mindfulness interventions (Gu et al., 2016). The FFMQ was originally developed as a 39-item tool to assess facets of mindfulness, including Nonjudging, Nonreactivity, Describing, Observing, and Acting with Awareness (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). The shortened 15-item version developed by Baer, Carmody, and Hunsinger (2012) was used in this study. The FFMQ-15 is considered a reliable and valid alternative to the FFMQ-39 (Gu et al., 2016).

The FFMQ-15 includes positive statements (for example, “I’m good at finding words to describe my feelings”) and negative statements (for example, “I have trouble thinking of the right words to express how I feel about things”). Items are rated on a five-point scale, ranging from 1 (Never or very rarely true) to 5 (Very often or always true).

The FFMQ total scores were calculated by adding the four subscales Nonjudging, Nonreactivity, Describing, and Acting with awareness. The subscale Observing was not included in the total as according to Gu et al. (2016) this subscale is not a valid measure for assessing change in mindfulness.

## **Childbirth Experience Questionnaire**

The Childbirth Experience Questionnaire (CEQ) was developed in Sweden by Dencker, Taft, Bergqvist, Lilja, and Berg (2010) as a tool to measure mothers' experiences of childbirth.

The CEQ includes 22 items which explore different dimensions of childbirth, including Professional Support, Own Capacity, Perceived Safety, and Participation. Items 1-19 are rated on a four-point scale, ranging from 1 (totally agree) to 4 (totally disagree). Items 20-22 are measured on a visual analogue scale. For example, "As a whole, how painful did you feel the childbirth was?" The answer for this question ranged from "No pain" to "Worst imaginable pain." Some items from the original CEQ were not included in the questionnaires completed by birth partners as they were not relevant or appropriate (for example, "I felt strong during labour and birth").

Walker, Wilson, Bugg, Dencker, and Thornton (2015) found the translated English version of the CEQ to be reliable (Cronbach's  $\alpha = .90$ ), with good face validity, construct validity, and criterion validity in a UK population.

Experience of childbirth was measured using the total CEQ scores and the Own Capacity subscale. Total CEQ is an overall representation of the childbirth experience containing all items within the CEQ, many of which pertain to both mothers and fathers. Scores from the Own Capacity subscale were used as it was considered this dimension would be most likely to be affected by mindfulness training.



Table 2 shows the measures that were included in the questionnaires completed by participants for both intervention and comparison groups at pre-intervention, post-intervention, and follow-up. A composite version of the questionnaires completed by all participants is attached (refer **Appendix D**). A total of 12 different questionnaires were used in this study (for mothers and fathers in the intervention and comparison groups, across three time periods). Accordingly, the attached version is condensed to include the questions asked of all participants at pre-, post-, and follow-up. Explanatory footnotes are included for ease of reference.

**Table 2**

*Measures Taken at Pre-Intervention, Post-Intervention, and Follow-Up*

Measure	Pre-		Post-		Follow-up	
	MG	CG	MG	CG	MG	CG
Demographic information	✓	✓				
Previous mindfulness experience	✓					✓
Antenatal class satisfaction			✓	✓		
Mindfulness satisfaction			✓			
Mindfulness practice			✓		✓	
Useful skills			✓			
Future use of mindfulness					✓	
PRAS	✓	✓	✓	✓		
DASS-21	✓	✓	✓	✓	✓	✓
FFMQ-15	✓	✓	✓	✓	✓	✓
CEQ					✓	✓

*Note.* MG = Mindfulness Group; CG = Comparison Group.

## **Intervention**

### **Trial A**

A guided mindfulness exercise was provided by the antenatal educator during the last 10-15 minutes of each class for the Trial A intervention group. Participants were reminded at the beginning of each activity that it was optional and it was their choice as to whether they remained for the activity or left the class. Prior to the mindfulness exercise, participants were invited to make themselves comfortable using beanbags, cushions, chairs, or Swiss balls. In the first class, there was a substitute teacher who carried out the mindfulness activity. The mindfulness exercises in the remaining five classes were led by the regular antenatal educator.

Each mindfulness exercise was intended to relate in some way to the theme of the antenatal class. For example, in the week three class which focuses on labour and childbirth, the mindfulness activity was an ice practice meditation which was designed to demonstrate an alternative perspective of ‘being with’ pain, rather than avoiding or managing it. A list of each weekly activity is set out below:

- Week one: Raisin meditation
- Week two: Body scan meditation
- Week three: Ice practice meditation
- Week four: Sounds and thoughts meditation
- Week five: Compassion meditation
- Week six: Mindfulness of breath and body meditation

The raisin meditation in week one involved participants using their senses to explore a raisin. For example, they were invited to pay attention to the appearance of the raisin, the way it felt, its smell, and its taste, with an open mind and curiosity. The idea behind this activity is to focus on being present in the moment and to experience a simple activity such as eating a raisin mindfully.

The week two body scan meditation involved participants being guided through a meditation which first focused on the breath, and then explored the sensations experienced in the body, from the feet gradually up through the body to the head, before expanding out to the whole body. This activity was used so that participants could learn how to mindfully focus their attention on the breath and body, and how to notice sensations which occur in the body.

With regard to the ice practice meditation in week three, participants each took a handful of ice and held it in one hand for a minute. They were invited to respond to the feeling of the cold ice and to express their discomfort in whatever way they wished. They discussed the feeling of the ice as a group for a few minutes, and then took another handful of ice in the other hand and held it for a minute. During this second exercise, participants were asked to focus on the breath and maintain this focus for the duration of the minute. Afterwards they discussed their experiences of this activity as a group and what they noticed. As described previously, this exercise presents an alternative strategy for helping to cope with pain.

The sounds and thoughts meditation in week four was a guided meditation where participants were invited to focus on their breath, then shift the focus of their attention to sounds, and then to thoughts as they arose. The idea is to help bring awareness to sounds and to notice thoughts as mental events which arise and then pass, rather than becoming caught up in them.

The week five activity was a guided compassion meditation. Participants were asked to first focus their attention on the breath, then bring thoughts of being happy, healthy, and living in peace to themselves. The same thoughts are then extended to a loved one, to someone who stirs up irritation or annoyance, to the community, and finally to all people and creatures on the planet. This meditation demonstrates how to bring a sense of compassion to self and to others.

A guided mindfulness of breath and body meditation was carried out in week six. This meditation involved participants focusing their attention on the breath and then on any sensations which arose in their bodies. This meditation helps to bring awareness to physical sensations in the body and demonstrates how to focus attention on the breath and body.

Week six also included a brief exercise using Chinese finger traps in addition to the mindfulness practice. Chinese finger traps are small tubes of woven bamboo. When a person pushes a finger into each end of the trap, then attempts to pull them out, the trap tightens, limiting the person's ability to remove their fingers. The harder the person pulls, the more the trap tightens on their fingers. When they relax and push their fingers in slightly, then the trap starts to release so that the fingers can be gently removed. The concept behind this exercise is to demonstrate the similarities with pain. If a person fights and struggles against pain, they become more entrapped and their distress increases; whereas if they accept and lean into the experience, their suffering decreases.

Following the mindfulness exercise at the end of each intervention class, participants were free to take a handout explaining a metaphor and providing a link to a free online meditation akin to the guided exercise carried out in class. The metaphors used were largely derived from Acceptance and Commitment Therapy (ACT) (Hayes, Strosahl, & Wilson, 1999). Metaphors were utilised in

this study as a means to offer alternative ways of looking at thoughts and feelings. A list of resources was attached to the handout on the first night for those who wished to learn more about mindfulness. A copy of the handouts and list of resources is attached (refer to **Appendix E**).

### **Trial B**

For Trial B, the intervention was intended to be identical to that carried out in Trial A. However, due to the large class size of 38, it was difficult for the antenatal educator to include the mindfulness activities in the sessions. The participants were very interactive and asked many questions of the teacher which led to productive group conversations. There were also time constraints with the classes finishing at 9pm. Because of these factors, there was insufficient time to incorporate the mindfulness practice for five out of six classes. The only mindfulness activity included for the Trial B intervention group was the ice practice meditation carried out in week three. All participants took part in this activity.

The antenatal educator responded to this challenge by weaving in mindfulness language throughout all of the classes in the Trial B intervention group in an attempt to incorporate some of the key concepts in this way. As mentioned above, however, there were no mindfulness activities other than the ice practice meditation in week three.

The weekly handouts were also made available for participants to take if they wished (as with Trial A).

## **Procedure**

The lead researcher presented the project to each antenatal group on the first night of the six-week course and explained the consent process. Questionnaires were completed at this time by all participants.

The lead researcher returned to the final Tuesday and Wednesday night antenatal classes for the purpose of distributing the second measure questionnaires. The questionnaires were completed by participants at the beginning of these classes. At this time participants also provided their due dates, email addresses and/or cellphone numbers, so that the lead researcher could contact them following their due date. The purpose of this was to find out the actual date of birth so that the final questionnaire could be forwarded to participants a month after the birth date.

Following completion of the antenatal classes, the lead researcher contacted each participant by text or email approximately 10 days after their baby's due date. This was to enquire whether their baby had arrived and, if so, the birth date. Subsequently, participants responded to the lead researcher with the baby's date of birth. One month following the birth, the lead researcher emailed the online link for the questionnaire to each participant for completion. The questionnaire was completed by participants via Qualtrics, an online survey programme into which the final questionnaires were loaded.

## **Data Analysis**

Data from all questionnaires were downloaded into IBM SPSS Statistics 24, checked for accuracy, and recoded where necessary. Before conducting statistical analyses, data were examined using descriptive statistics and tested for normality. Pregnancy-related anxiety data were found to be normally distributed and

therefore independent-samples and paired-samples *t*-tests were used to analyse this data. The remaining data were not normally distributed. Accordingly, the Mann Whitney *U* Test was used to analyse the between-subjects data relating to psychological distress, mindfulness, and childbirth experience. Within-subjects data relating to psychological distress and mindfulness was analysed using the Wilcoxon signed-rank test.

An ANOVA analysis was not used as several assumptions were violated. The distribution of data for psychological distress, mindfulness, and childbirth experience was bimodal and therefore unable to be transformed. There was heterogeneity of variance for each group and differences in group sample size.

In spite of attempts by the antenatal educator to incorporate aspects of the intervention into the Trial B mindfulness condition classes, this was not considered to be equivalent to the planned intervention. Therefore, it was decided to analyse the data from Trial A only. Eliminating Trial B data from analysis dramatically reduced the overall sample.

A post-hoc power analysis showed that due to the small sample size (as only Trial A data were analysed), there was insufficient power to detect the small differences that were expected to be seen in this study. G\*Power analysis showed that power for within-subjects was 0.23 and for between-subjects it was 0.15. Therefore, the results of this pilot study should be interpreted with caution and considered preliminary at this stage.

## **Chapter 3: Results**

### **Antenatal Class Satisfaction**

Participants' satisfaction with the antenatal classes was measured using a five-point Likert scale at the final antenatal class. Table 3 shows the response to satisfaction-related questions for both groups.

The large majority of people in both groups reported being satisfied with the classes. No one rated themselves as 'not at all' or 'rarely' and only a few rated 'sometimes'. Levels of satisfaction appear similar across genders; however, the sample size is too small for statistical analysis.

A Mann-Whitney *U* analysis of the data in Table 3 showed no significant differences between the mindfulness and comparison groups for any of the class satisfaction questions.



**Table 3**

*Frequency of Responses to Antenatal Class Satisfaction Questions and Valid Percentages for Each Group*

Item/ Rating scale	MG Total	CG Total	MG Fathers	MG Mothers	CG Fathers	CG Mothers
	<i>n</i> = 17	<i>n</i> = 13	<i>n</i> = 8	<i>n</i> = 9	<i>n</i> = 6	<i>n</i> = 7
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
I felt welcome in the antenatal classes						
Very much	15 (88.2)	10 (76.9)	7 (87.5)	8 (88.9)	5 (83.3)	5 (71.4)
Mostly	2 (11.8)	3 (23.1)	1 (12.5)	1 (11.1)	1 (16.7)	2 (28.6)
Sometimes	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Rarely	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Not at all	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
I felt comfortable in the antenatal classes						
Very much	13 (76.5)	9 (69.2)	7 (87.5)	6 (66.7)	4 (66.7)	5 (71.4)
Mostly	4 (23.5)	3 (23.1)	1 (12.5)	3 (33.3)	2 (33.3)	1 (14.3)
Sometimes	0 (0)	1 (7.7)	0 (0)	0 (0)	0 (0)	1 (14.3)
Rarely	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Not at all	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
I felt I received the information I needed						
Very much	6 (35.3)	8 (61.5)	3 (37.5)	3 (33.3)	4 (66.7)	4 (47.1)
Mostly	11 (64.7)	5 (38.5)	5 (62.5)	6 (66.7)	2 (33.3)	3 (42.9)
Sometimes	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Rarely	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Not at all	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
The classes were what I expected						
Very much	2 (11.8)	6 (46.2)	1 (12.5)	1 (11.1)	3 (50)	3 (42.9)
Mostly	13 (76.5)	6 (46.2)	6 (75)	7 (77.8)	3 (50)	3 (42.9)
Sometimes	2 (11.8)	1 (7.7)	1 (12.5)	1 (11.1)	0 (0)	1 (14.3)
Rarely	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Not at all	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Overall, I was satisfied with the antenatal classes						
Very much	6 (35.3)	9 (69.2)	3 (37.5)	3 (33.3)	4 (66.7)	5 (71.4)
Mostly	11 (64.7)	4 (30.8)	5 (62.5)	6 (66.7)	2 (33.3)	2 (28.6)
Sometimes	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Rarely	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Not at all	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

*Note.* MG = Mindfulness Group; CG = Comparison Group.

## **Mindfulness Satisfaction**

Table 4 sets out the responses of intervention group participants to mindfulness satisfaction questions recorded at the final antenatal class. These responses were measured using a four-point Likert scale. The majority of participants reported that they thought mindfulness was an appropriate addition to antenatal classes. Half of the participants stayed for all six mindfulness sessions and one person did not stay for any, reportedly due to tiredness. The large majority of participants reported being comfortable practising mindfulness in class and a small minority stated they were not very comfortable. Most people reported that they enjoyed the mindfulness activities and a few reported they did not enjoy them.

In terms of overall satisfaction with mindfulness exercises in class, two-thirds of participants reported they were satisfied with these activities. The remainder of participants reported they were not very satisfied with the mindfulness exercises.

**Table 4**

*Frequency of Responses to Mindfulness Satisfaction Questions and Valid Percentages*

Item/ Rating scale	MG Total	MG Fathers	MG Mothers
	<i>n</i> = 17	<i>n</i> = 8	<i>n</i> = 9
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
How appropriate do you think mindfulness is as an addition to antenatal classes?			
Very appropriate	4 (25)	2 (28.6)	2 (22.2)
Reasonably appropriate	10 (62.5)	3 (42.9)	7 (77.8)
Not very appropriate	2 (12.5)	2 (28.6)	0 (0)
Not at all appropriate	0 (0)	0 (0)	0 (0)
How many of the six mindfulness sessions did you stay for?			
6	9 (52.9)	5 (62.5)	4 (44.4)
4-5	5 (29.4)	2 (25)	3 (33.3)
2-3	2 (11.8)	1 (12.5)	1 (11.1)
0-1	1 (5.9)	0 (0)	1 (11.1)
How comfortable were you practicing mindfulness meditation in class?			
Very comfortable	6 (37.5)	3 (37.5)	3 (37.5)
Reasonably comfortable	9 (56.3)	4 (50)	5 (62.5)
Not very comfortable	1 (6.3)	1 (12.5)	0 (0)
Not at all comfortable	0 (0)	0 (0)	0 (0)
How much did you enjoy the mindfulness exercises in class?			
Very much	5 (31.3)	2 (25)	3 (37.5)
Somewhat	7 (43.8)	3 (37.5)	4 (50)
Not very much	3 (18.8)	2 (25)	1 (12.5)
Not at all	1 (6.8)	1 (12.5)	0 (0)
Overall, how satisfied were you with the mindfulness exercises in class?			
Very satisfied	4 (25)	1 (12.5)	3 (37.5)
Reasonably satisfied	7 (43.8)	4 (50)	3 (37.5)
Not very satisfied	5 (31.3)	3 (37.5)	2 (25)
Not at all satisfied	0 (0)	0 (0)	0 (0)

*Note.* MG = Mindfulness Group.

## Mindfulness Skills and Practice

At the final antenatal class, participants were asked whether they thought that learning about mindfulness had given them some skills they could use in the future. They were also asked whether they practiced mindfulness at times other than in antenatal classes. Dichotomous yes/no categories were used. Table 5 sets out the responses of participants to these questions.

Two-thirds of participants in the mindfulness group reported that learning about mindfulness has given them some skills they can use in the future. This figure comprises 86 percent of mothers and half of fathers.

One-quarter of participants in the intervention group reported practising mindfulness at times other than during antenatal classes (all of whom were mothers).

**Table 5**

*Frequency of Responses to Mindfulness Skill and Practice Questions and Valid Percentages (Post-Intervention)*

Item/ Rating scale	MG Total	MG Fathers	MG Mothers
	<i>n</i> = 17	<i>n</i> = 8	<i>n</i> = 9
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
Do you think that learning about mindfulness has given you any skills that you can use in the future?			
Yes	10 (66.7)	4 (50)	6 (85.7)
No	5 (33.3)	4 (50)	1 (14.3)
Did you practice mindfulness meditation at times other than in antenatal class?			
Yes	4 (25)	0 (0)	4 (44.4)
No	12 (75)	7 (100)	5 (55.6)

*Note.* MG = Mindfulness Group.

## Mindfulness Practice and Future Use

As shown in Table 6, participants in the mindfulness group were asked at follow-up whether they had practiced mindfulness meditation subsequent to the completion of antenatal classes. A dichotomous yes/no scale was used. They were also asked whether they considered that they would use mindfulness in the future, using a yes/no/maybe response set.

Of those who participated at follow-up, one of the eight mothers in the mindfulness group stated she had practiced mindfulness subsequent to the conclusion of classes.

Four participants in the mindfulness group reported they would use mindfulness again in the future (two mothers and two fathers). Three participants stated they might use mindfulness in the future (two mothers and one father) and one mother reported she would not use mindfulness in the future.

**Table 6**

*Frequency of Responses to Mindfulness Practice and Use Questions and Valid Percentages (at Follow-Up)*

Item/ Rating scale	MG Total	MG Fathers	MG Mothers
	<i>n</i> = 8	<i>n</i> = 3	<i>n</i> = 5
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
Have you practiced mindfulness meditation since completing antenatal classes?			
Yes	1 (12.5)	0 (0)	1 (20)
No	7 (87.5)	3 (100)	4 (80)
Do you think that mindfulness is something that you will use in the future?			
Yes	4 (50)	2 (66.7)	2 (40)
No	1 (12.5)	0 (0)	1 (20)
Maybe	3 (37.5)	1 (33.3)	2 (40)

*Note.* MG = Mindfulness Group.

## Pregnancy-Related Anxiety

Pregnancy-related anxiety was measured at pre-intervention (Time 1) and post-intervention (Time 2) using the Pregnancy-Related Anxiety Questionnaire (PRAQ). Table 7 sets out the PRAQ means and standard deviations for all participants at pre- and post-intervention.

**Table 7**

*Group Means and Standard Deviations for Pregnancy-Related Anxiety Measured at Pre-Intervention (Time 1) and Post-Intervention (Time 2)*

Group	Time 1			Time 2		
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>
MG Total	23	1.90	0.46	17	1.80	0.41
CG Total	14	1.91	0.62	13	1.82	0.47
MG Fathers	11	1.72	0.51	8	1.71	0.30
CG Fathers	6	1.60	0.55	6	1.68	0.56
MG Mothers	12	2.07	0.34	9	1.88	0.48
CG Mothers	8	2.14	0.59	7	1.94	0.38

*Note.* MG = Mindfulness Group; CG = Comparison Group.

Figure 1 shows the mean pregnancy-related anxiety scores for participants in the mindfulness and comparison groups. This graph represents only scores from participants who completed questionnaires at both pre- and post-intervention (MG  $n = 17$  and CG  $n = 13$ ).

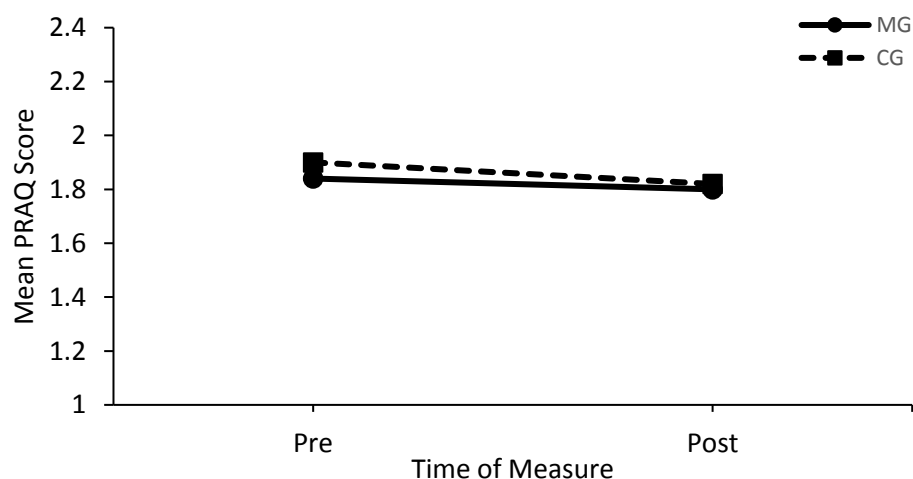
An independent-samples t-test analysis of this data showed no significant pre-intervention difference in pregnancy-related anxiety between the mindfulness

group ( $M = 1.90$ ,  $SE = 0.10$ ) and comparison group ( $M = 1.91$ ,  $SE = 0.17$ ). The difference was .007, BCa 95% CI [-.33, .39],  $t(35) = 0.04$ ,  $p = .968$ ,  $d = -.02$ .

No significant difference in pregnancy-related anxiety was found post-intervention using an independent samples t-test between the mindfulness group ( $M = 1.80$ ,  $SE = 0.10$ ) and comparison group ( $M = 1.82$ ,  $SE = 0.13$ ). The difference was .02, BCa 95% CI [-.27, .33],  $t(28) = 0.14$ ,  $p = .89$ ,  $d = .04$ .

A paired-samples t-test analysis showed no significant change in pregnancy-related anxiety for the mindfulness group between pre-test ( $M = 1.84$ ,  $SE = 0.09$ ) and post-test ( $M = 1.80$ ,  $SE = 0.10$ ). The difference was .04, BCa 95% CI [-.13, .19],  $t(16) = 0.48$ ,  $p = .641$ ,  $d = -.11$ .

No significant change was found in pregnancy-related anxiety for the comparison group using a paired samples t-test between pre-test ( $M = 1.91$ ,  $SE = 0.18$ ) and post-test ( $M = 1.82$ ,  $SE = 0.13$ ). The difference was .08, BCa 95% CI [-.06, .25],  $t(12) = 1.07$ ,  $p = .306$ ,  $d = -.14$ .



*Figure 1.* Pregnancy-related anxiety at pre-intervention and post-intervention for Mindfulness Group (MG) ( $n = 17$ ) and Comparison Group (CG) ( $n = 13$ ).

## Psychological Distress

Psychological distress was measured using the Depression, Anxiety, and Stress Scale (DASS) at pre-intervention (Time 1), post-intervention (Time 2), and follow-up (Time 3). DASS total score means and standard deviations for mindfulness and comparison groups are set out in Table 8.

**Table 8**

*Group Means and Standard Deviations for Psychological Distress Measured at Pre-Intervention (Time 1), Post-Intervention (Time 2), and Follow-Up (Time 3)*

Group	Time 1			Time 2			Time 3		
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>
MG Total	21	21.57	13.15	15	21.27	12.19	8	13.75	10.66
CG Total	14	13.86	12.76	13	15.54	10.40	13	18.61	18.82
MG Fathers	10	15.90	9.00	7	15.71	8.67	3	8.00	6.00
CG Fathers	7	5.00	4.36	6	8.33	7.20	6	13.00	14.57
MG Mothers	11	26.73	14.54	8	26.12	13.23	5	17.20	11.88
CG Mothers	7	22.71	12.28	7	21.71	8.75	7	23.43	21.75

*Note.* MG = Mindfulness Group; CG = Comparison Group.

Figure 2 shows the mean DASS scores for participants in the mindfulness and comparison groups. Scores from participants who completed questionnaires at both pre- and post-intervention only are represented in this graph (MG  $n = 15$  and CG  $n = 13$ ).

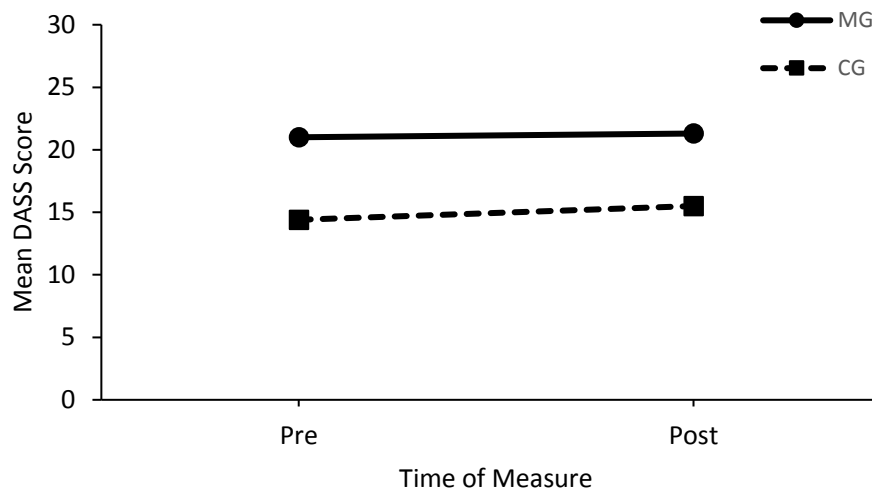
A Mann-Whitney  $U$  analysis of this data showed that psychological distress in the mindfulness group ( $M = 21.07$ ) did not differ significantly from the comparison group ( $M = 14.38$ ) at pre-intervention  $U = 125.50$ ,  $z = 1.30$ ,  $p = .20$ .



There was also no significant difference in psychological distress between the mindfulness group ( $M = 21.27$ ) and comparison group ( $M = 15.54$ ) post-intervention  $U = 120.00$ ,  $z = 1.04$ ,  $p = .32$ , however there was a small effect,  $r = .20$ .

A related-samples Wilcoxon signed-rank test showed no significant change in psychological distress for the mindfulness group between pre-test ( $M = 21.57$ ) and post-test ( $M = 21.27$ ),  $T = 62.5$ ,  $p = .886$ ,  $r = .04$ .

For the comparison group, there was also no significant change in psychological distress using a related-samples Wilcoxon signed-rank analysis between pre-test ( $M = 13.86$ ) and post-test ( $M = 15.54$ ),  $T = 40$ ,  $p = .196$ ,  $r = .36$ .



*Figure 2.* Psychological distress at pre-intervention, post-intervention and follow-up for Mindfulness Group (MG) ( $n = 15$ ) and Comparison Group (CG) ( $n = 13$ ).

## Mindfulness

Mindfulness was measured using the Five Facet Mindfulness Questionnaire (FFMQ) at pre-intervention (Time 1), post-intervention (Time 2), and follow-up (Time 3). FFMQ means and standard deviations for all participants are shown in Table 9.

Total FFMQ scores were calculated by adding the four subscales Nonjudging, Nonreactivity, Describing, and Acting with Awareness. As described previously, the subscale Observing was not included due to validity concerns.

**Table 9**

*Group Means and Standard Deviations for Mindfulness Measured at Pre-Intervention (Time 1), Post-Intervention (Time 2), and Follow-Up (Time 3)*

Group	Time 1			Time 2			Time 3		
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>
MG Total	19	41.63	7.46	15	42.93	5.82	8	41.75	5.34
CG Total	12	43.17	7.46	12	43.50	5.92	13	43.85	5.86
MG Fathers	9	44.78	5.93	7	46.00	5.29	3	46.00	5.57
CG Fathers	6	45.50	8.83	6	44.33	6.68	6	43.83	4.62
MG Mothers	10	38.80	4.47	8	40.25	5.12	5	39.20	3.56
CG Mothers	6	40.83	5.60	6	42.67	5.54	7	43.86	7.13

*Note.* MG = Mindfulness Group; CG = Comparison Group.

Figure 3 shows the mean FFMQ scores for participants in the mindfulness and comparison groups. This graph includes scores from participants who completed questionnaires at both pre- and post-intervention only (MG  $n = 15$  and CG  $n = 12$ ).

A Mann-Whitney  $U$  analysis of this data showed that mindfulness in the intervention group ( $M = 42.07$ ) did not differ significantly from the comparison group ( $M = 43.17$ ) at pre-intervention  $U = 84.00$ ,  $z = -0.29$ ,  $p = .79$ ,  $r = -.06$ . There was also no significant difference in mindfulness between the intervention group ( $M = 42.93$ ) and comparison group ( $M = 43.50$ ) post-intervention  $U = 84.50$ ,  $z = -0.27$ ,  $p = .79$ ,  $r = -.05$ .

A related-samples Wilcoxon signed-rank test showed no significant change in mindfulness for the mindfulness group between pre-test ( $M = 41.63$ ) and post-test ( $M = 42.93$ ),  $T = 39$ ,  $p = .590$ ,  $r = .14$ .

For the comparison group, there was also no significant change in mindfulness using a related-samples Wilcoxon signed-rank analysis between pre-test ( $M = 43.17$ ) and post-test ( $M = 43.50$ ),  $T = 45.50$ ,  $p = .609$ ,  $r = .15$ .

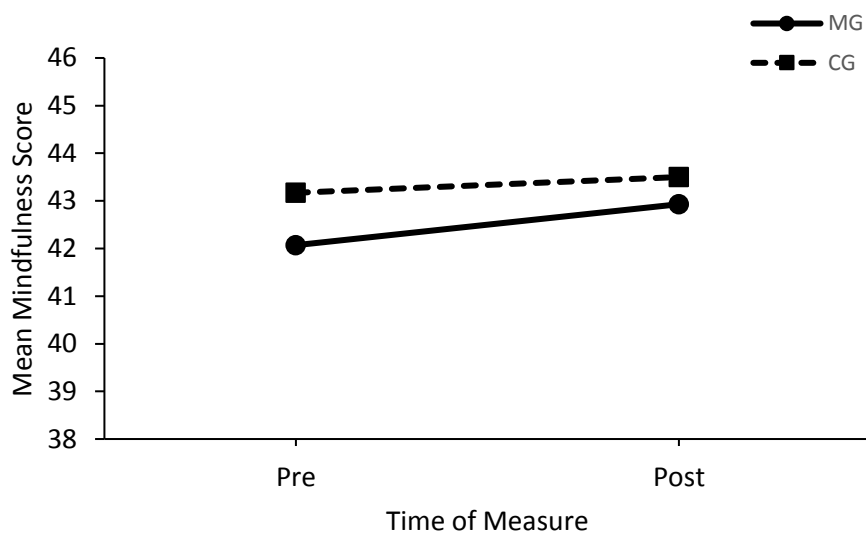


Figure 3. Mindfulness at pre-intervention and post-intervention for Mindfulness Group (MG) ( $n = 15$ ) and Comparison Group (CG) ( $n = 12$ ).

## Birth Experience

Childbirth experience was measured at follow-up using the Childbirth Experience Questionnaire (CEQ). Table 10 shows the CEQ means and standard deviations for all participants who completed the follow-up questionnaire (MG  $n = 8$  and CG  $n = 13$ ).

CEQ scores are presented on the CEQ Own Capacity subscale (which includes items relevant to mothers only) and CEQ Total. Higher scores on the CEQ reflect a more positive birth experience.

**Table 10**

*Group Means and Standard Deviations for Childbirth Experience Measured at Follow-Up*

Measure/Group	<i>N</i>	<i>M</i>	<i>SD</i>
CEQ Own Capacity			
MG Mothers	5	2.27	0.28
CG Mothers	7	2.07	0.40
CEQ Total			
MG Total	8	2.25	0.39
CG Total	13	2.06	0.45
MG Fathers	3	2.36	0.59
MG Mothers	5	2.18	0.28
CG Fathers	6	2.24	0.48
CG Mothers	7	1.91	0.39

*Note.* CEQ = Childbirth Experience Questionnaire; MG = Mindfulness Group; CG = Comparison Group.

A Mann-Whitney  $U$  analysis was conducted which showed no significant difference for the subscale Own Capacity (CEQ Own Capacity) between the mindfulness group ( $M = 2.27$ ) and the comparison group ( $M = 2.07$ )  $U = 23.50$ ,  $z = 0.99$ ,  $p = .343$ , although there was a medium effect size,  $r = .29$ . There was also no significant difference in the overall birth experience (CEQ Total) between the mindfulness group ( $M = 2.25$ ) and the comparison group ( $M = 2.06$ )  $U = 72.00$   $z = 1.45$ ,  $p = .161$ , with a medium effect size,  $r = .32$ . The direction and size of these effects shows that people in the mindfulness group had a more positive experience.

## **Chapter 4: Discussion**

### **Objectives**

There were several objectives of this pilot study. First, to explore whether incorporation of mindfulness into an established antenatal education curriculum is feasible. Second, to explore whether new parents consider mindfulness to be an acceptable and appropriate addition to standard antenatal classes. Third, to establish whether a brief mindfulness intervention in antenatal classes would help to improve the wellbeing of new parents. Fourth, to explore whether there were differences in the overall birth experiences of participants in the intervention group, compared with the comparison group.

Few studies have examined the acceptability and effectiveness of mindfulness in antenatal classes. The research that does exist is in the context of participants deliberately signing up for antenatal classes in which they are aware that mindfulness is a central component (Beattie et al., 2017; Dhillon et al., 2017; Duncan et al., 2017; Fisher, Hauck, Bayes, & Byrne, 2012; Townshend et al., 2018; Zhang & Emory, 2015; Zhang, Cui, Zhou, & Li, 2018). The current study is novel in that a brief mindfulness activity was introduced into standard antenatal classes and participants were unaware at the time of enrolment that mindfulness would be a component of the classes.

There is very little research looking into the experiences of men in antenatal classes, particularly when mindfulness is included. This study included fathers and begins to provide some insight into their experiences, but is limited by a small number of participants. Accordingly, separating responses by gender was not always appropriate.

The main findings from this study are summarised in this chapter and then discussed with respect to the literature. Challenges and limitations of the research will be presented, along with the feasibility of the intervention. Suggestions for a revised curriculum and recommendations for future research will be discussed.

## **Review of Findings**

In terms of satisfaction with the antenatal classes, there were some minor differences between groups. Generally, participants in both groups were satisfied with the antenatal classes overall, although people in the comparison group appeared to be slightly (but not significantly) more satisfied than the intervention group. This may have been because some people in the intervention group were dissatisfied with the classes running over time to incorporate the mindfulness activities, at a time when many people were tired. Tiredness was mentioned to the antenatal educator as a reason why some participants in the intervention group chose not to remain for the mindfulness exercises and it was a common theme identified by participants as being problematic. For example, when asked what they liked least about the classes, three participants in the mindfulness group commented that they were tired by the end of the classes and found the 9pm or later end time difficult.

Another possible reason is that some participants may not have enjoyed the mindfulness activities – two people commented that mindfulness was not really for them. For example, in response to the question “Do you think that learning about mindfulness has given you any skills that you can use in the future?” one participant selected “No” and added the comment “Not my cup of tea.” In response to the question “How appropriate do you think mindfulness is as

an addition to antenatal classes?” one participant selected “Not very appropriate” and commented “It’s not something I find helpful personally.”

However, most people indicated they were reasonably satisfied with the mindfulness exercises overall. The majority of participants in the intervention group reported that they enjoyed the mindfulness activities and most said they thought mindfulness was an appropriate addition to antenatal classes. When asked for comments about mindfulness in antenatal classes, one participant wrote “Really enjoyed it and it was very helpful to learn and put it into practice.”

Half of the participants stayed for all six mindfulness sessions, and another almost 30 percent stayed for 4-5 sessions. Therefore, despite the activities being carried out at the end of the night when participants were tired, most chose to stay.

Participants in the comparison group were more likely to say they had received the information they needed. Similarly, more participants in the comparison group thought the classes were what they expected than those in the intervention group. While the antenatal class content was the same for both groups, the mindfulness component was the differentiating element. This suggests that the mindfulness activities may have been experienced less positively by some people.

Post-intervention, approximately two-thirds of participants in the mindfulness group reported that learning about mindfulness had given them some skills they could use in the future. This included four fathers and six mothers. In response to being asked what skills learning about mindfulness has given them, comments included “Connecting with your body” and “Mainly just that it is a useful thing to incorporate into daily life.”

However, only about one-quarter of participants (all mothers) reported that they practiced meditation outside of the antenatal classes. These results suggest



that, while few people actually practiced mindfulness outside of class, most felt that learning about mindfulness had taught them some useful skills. Alternatively, it may be reflective of the participants' desire to please the researcher by responding positively to the intervention.

At follow-up, only one participant had practiced mindfulness meditation since completing antenatal classes. Despite this, a third of participants in the mindfulness group thought they would use mindfulness again in the future. Almost half responded slightly more tentatively that they might use it again. Approximately a quarter of participants stated they would not use mindfulness again. Therefore, although people were not actually currently practicing mindfulness, most were open to the possibility of using it in the future. It is not clear whether this is genuine, or at least in part related to demand characteristics.

No statistically significant differences were found in pregnancy-related anxiety using between-group analyses. There were also no significant changes in pregnancy-related anxiety after the mindfulness intervention using within-group analyses. A small to medium effect of the intervention was observed in between-group comparisons for psychological distress ( $r = .20$ ) which did not reach statistical significance. There were no significant pre- post- changes in psychological distress as a result of the mindfulness intervention. The sample size at post-intervention was small due to attrition in both the intervention group ( $n = 15$ ) and the comparison group ( $n = 13$ ). Attrition and the exclusion of Trial B data resulted in the small sample size, which meant that the power was insufficient to detect the kind of small to medium effect that might be expected from this type of intervention (confirmed by a G\*Power analysis).

A possible confounding factor was that two comparison group fathers who completed the DASS-21 at each time period indicated they had no symptoms of

psychological distress at all, resulting in overall DASS-21 scores of 0. This may not be an accurate representation of their experience, due to the implausibility of not experiencing any level of distress. It may simply have been a strategy utilised to complete the questionnaires expeditiously, which affected the overall scores. A search of the literature has not revealed any studies which examine how to interpret zero scores in psychometrics measuring psychological distress. Therefore, the data regarding the fathers should be interpreted with care.

There were no significant differences in mindfulness between the mindfulness and comparison group, nor were there any significant pre- post- changes in mindfulness for the mindfulness group. This may be because participants tended not to practice mindfulness at times other than in antenatal classes.

With regard to childbirth experience, there were modest differences ( $r = .29$  and  $r = .32$ ) between the mindfulness and comparison groups for own capacity and total childbirth experience respectively, but these were not statistically significant. This suggests that, while not significant, people in the mindfulness group appeared to have had a more positive birth experience than people in the comparison group. However, high attrition resulted in a very small number of participants completing questionnaires at follow-up, in both intervention ( $n = 5$ ) and comparison ( $n = 7$ ) groups. A larger sample size would have increased the power and might have yielded statistically significant results.

## **Findings Related to Existing Research about Mindfulness in Antenatal Classes**

This study found no significant improvements in participants' wellbeing following this brief mindfulness intervention in the context of typical antenatal classes.

Couples in the mindfulness group generally enjoyed the classes, but most did not practice mindfulness outside of class. There were no reductions in participants' distress or anxiety about their pregnancy, nor did they become more mindful. People in the mindfulness group may have had a slightly better overall birth experience, although this is difficult to determine with certainty.

While there is limited research exploring the use of mindfulness in antenatal classes, some studies have found that incorporating mindfulness into antenatal classes resulted in reduced distress, increased mindfulness, and improved wellbeing for mothers (Byrne et al., 2014; Dhillon et al., 2017; Duncan & Bardacke, 2010). However, these interventions were more intensive than the current study, the classes were attended by mothers who had signed up for a mindfulness-based class, and data from mothers only were analysed. Therefore, it is likely that participants in the prior studies already had some understanding of mindfulness, may have practiced it regularly or, if not, at least were open to the idea of learning about and practicing mindfulness.

In the current study, participants were unaware at the time of enrolling that they would be learning about mindfulness and may not have had any experience or prior knowledge about mindfulness. Accordingly, they were not selected for their interest in and willingness to practice mindfulness. In contrast to other studies, the mindfulness component was a brief 10-minute activity and there was no homework assigned to participants. Furthermore, this study also includes data

from fathers in the analysis and it appears that fathers may have been slightly less enthusiastic about the mindfulness component than mothers.

Some of the findings in the current study are comparable to a similar study by Beattie et al. (2017). They also found no statistically significant differences between the intervention and control groups for mindfulness, depression, stress, or childbirth experience. However, in that study, the feasibility and acceptability of a mindfulness-based pregnancy programme were confirmed. There were similar challenges in terms of high attrition (largely due to tiredness), resulting in insufficient power to detect statistically significant differences.

Current research suggests that regularly practicing mindfulness promotes wellbeing and reduces distress (de Abreu Costa et al., 2018; Lomas et al., 2018; Rodrigues et al., 2017). No significant changes were observed in this study as a result of the mindfulness intervention. However, the very limited implementation of mindfulness practice in the mindfulness group may be one factor which accounts for the lack of an effect of the intervention.

The literature suggests that numerous barriers exist to pregnant women accessing help to relieve their distress (Da Costa et al., 2018; Goodman, 2009). Most commonly, barriers include lack of time, cost, mental health stigma, difficulties with childcare, and lack of awareness of options available. It is argued that mindfulness may be a useful strategy to help mitigate these barriers. Introducing pregnant women and their partners to mindfulness in a supportive antenatal educational environment where mindfulness is normalised and encouraging them to practice meditation at home, may help to alleviate their distress and prevent its escalation. The common barriers around stigma, cost, childcare, and lack of time would be largely addressed through the use of mindfulness practice at home.

## **Feasibility**

One of the main objectives of this study was to determine whether it is feasible to incorporate mindfulness into standard antenatal classes. This study revealed some challenges in terms of incorporating the mindfulness intervention into an already established antenatal curriculum and the results with respect to feasibility are mixed. However, with some adaptations to streamline and integrate the mindfulness component more effectively, it may be a feasible addition to antenatal classes.

Most participants thought that mindfulness was an appropriate addition to antenatal classes and most considered they had learned skills which they may use in the future. In the Trial A group, where the size of the classes was manageable, the antenatal educator was able to incorporate the mindfulness activities without too much difficulty. However, with the Trial B classes, which were much larger than usual, including the mindfulness component proved challenging, resulting in the intervention group not carrying out the mindfulness activities in all but one class.

The question of feasibility may be answered by the implementation of a revised, more integrated curriculum which encourages mindfulness homework practice. Other studies have emphasised the importance of daily homework practice adding to the weekly “dose” of mindfulness (Beattie et al., 2017; Dhillon et al., 2017; Duncan et al., 2017; Fisher et al., 2012; Townshend et al., 2018; Zhang et al., 2018). With some adjustments, incorporating mindfulness into standard antenatal classes may be feasible, but further research is necessary to address the challenges identified in this study.

## Challenges and Limitations

There were a number of challenges associated with the implementation of mindfulness into standard antenatal classes. The first two classes (Trial A) proceeded as anticipated, with no difficulties encountered with implementation. However, the second two classes (Trial B) were different.

Due to the time of year (just prior to Christmas), both the Trial B mindfulness and comparison classes were considerably larger than usual. The Trial B participants were also very interactive, asked many questions of the educator, and engaged well with the group. Whilst this is a beneficial learning environment for new parents, it resulted in the classes running well over time each night. Therefore, on most nights there was insufficient time to include the mindfulness activity, as participants were tired and ready to go home. This resulted in the Trial B intervention group receiving only one mindfulness activity, which was the ice meditation. For the remaining five nights of the Trial B course, the mindfulness exercises were not included.

As Trial B effectively did not receive the intervention, it was decided not to include the data from this group in the analysis. The effect of this was that our sample size was considerably smaller than originally anticipated.

Minimal effects were found from the mindfulness intervention in this study. As discussed previously, there are a number of possible reasons for this. Firstly, the intervention was a very brief 10-minute activity carried out once a week. Other studies have looked at the effects of interventions which provided weekly mindfulness education and exercises of two hours on average over eight weeks (Beattie et al., 2017; Dhillon et al., 2017; Fisher et al., 2012; Townshend et al., 2018; Zhang & Emory, 2015). The brief duration of the mindfulness exercise

may have been insufficient to create an effect. Second, most participants in this study did not practice mindfulness at times other than in antenatal class. In other studies, participants carried out mindfulness homework practice (Beattie et al., 2017; Dhillon et al., 2017; Duncan et al., 2017; Fisher et al., 2012; Townshend et al., 2018; Zhang et al., 2018). Third, the sample size included in the final analysis was very small due to Trial B participants being excluded. Fourth, not all participants in Trial A stayed for every mindfulness activity due to tiredness. Fifth, there was high attrition, with many participants not completing the second or third questionnaires, which resulted in a very small sample size. Attrition is a challenge encountered in other studies exploring the use of mindfulness during pregnancy (Beattie et al., 2017; Matvienko-Sikar, Lee, Murphy, & Murphy, 2016; Townshend et al., 2018; Zhang & Emory, 2015)

It was initially intended that this research would contribute to existing literature by exploring the experiences of fathers during their partner's pregnancy and childbirth. However, due to attrition and the resulting reduced sample size, it was considered that dividing the groups by gender would result in data that was insufficiently powered to usefully contribute to existing research.

## **Revised Curriculum**

To address the challenges described in this pilot study, a revised curriculum has been prepared in consultation with the antenatal educator for implementation into future antenatal classes (refer to **Appendix F**). The revised curriculum includes mindfulness activities which are more specifically pertinent to the pregnancy and birthing process; for example, mindful movement and acceptance meditations. The activities are more closely related to the topic covered in class each week. It is recommended that the mindfulness activities are carried out midway through

each class, rather than at the end, to address the issue of people becoming too tired at the end of the night to remain for the mindfulness exercise.

## **Recommendations for Future Research**

Notwithstanding the limitations and challenges described above, with some adjustments it is potentially feasible to incorporate mindfulness into standard antenatal classes. The next step would be conducting research utilising a revised curriculum as described above to address the challenges found in this pilot study. Future research should be well-powered using larger sample sizes, including fathers, and randomized control groups to explore the effects of mindfulness in antenatal classes.

Exploration of fathers' experiences utilising a larger sample would be a helpful contribution to existing literature. According to O'Brien et al. (2017), at least 10 percent of fathers experience distress during the perinatal period. It would be helpful, therefore, if distressed fathers are provided with strategies to increase their wellbeing. This is an area which is yet to be explored. It may be useful to qualitatively explore fathers' perspectives on responding to measures of distress, given some fathers tended to respond to these measures by indicating they were completely free of any distress. As fathers in this study were less likely to practice mindfulness than mothers, it may also be useful to conduct a qualitative investigation of fathers' experiences with practicing mindfulness.

Future studies should also allocate homework exercises and encourage participants to practice mindfulness at home. It would be helpful to include a question asking participants their reasons for not practicing mindfulness at home in future research. This may provide useful information so that potential solutions to these barriers can be explored. A further follow-up measure (for example, after



six months) would help to determine whether participants in the intervention group are more likely than the comparison group to practice mindfulness at home.

While pregnancy is an exciting time of anticipation and joy for some, for others it can be anxiety-provoking and frightening. Ongoing distress during pregnancy is associated with increased risks for mothers in terms of mental health and wellbeing; for babies, there is increased risk to healthy development (Cole-Lewis et al., 2014; Field, 2017; Muzik & Hamilton, 2016). Some research suggests that mindfulness may be a useful tool for improving wellbeing and reducing distress during pregnancy (Byrne et al., 2014; Dhillon et al., 2017; Duncan & Bardacke, 2010). However, further research is needed into whether mindfulness is a useful and acceptable universal preventative intervention which will help to promote the wellbeing of new parents and their babies in a broad population.

## **Conclusion**

Whilst there were some challenges faced in the implementation of this pilot study, it appears that mindfulness may be a feasible addition to the standard antenatal education curriculum. With adaptations to ensure the mindfulness component is incorporated smoothly into the curriculum, it is anticipated that the inclusion of mindfulness into standard antenatal classes is achievable and potentially useful for promoting wellbeing in new parents. However, further research is necessary which addresses the challenges identified in this study. The outcomes of further research may have implications for brief mindfulness interventions being included in a range of health and social settings.

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## **Appendix A**

### **Antenatal Education and Childbirth Experience** **Research Information Sheet**

This research will explore the effects of some different kinds of activities and information in antenatal classes. We will look at whether the way in which antenatal education is provided has an effect on experiences of pregnancy and childbirth. We are also interested in participants' overall impressions of the antenatal classes.

We will be carrying out some activities in the last 15 minutes of each antenatal class for those who wish to learn some relaxation and mindfulness skills. You are welcome to attend and participate in these activities, regardless of whether you participate in the research.

If you choose to participate in the research, you will be asked to complete a brief questionnaire (which should only take 10-15 mins) at the first and last antenatal classes (during class). You will be asked to complete the final questionnaire approximately one month following the birth of your baby (online or on paper – whichever you prefer). We will ask you questions about how you felt during the pregnancy and birth, and about your overall experience of childbirth. We will also ask for your feedback about the antenatal classes. You are not required to answer any questions if you don't want to.

Both mothers and birth partners are welcome to participate in the research.

Your participation is voluntary and you can withdraw at any time. Whether or not you participate in the research will not affect what happens in your childbirth education class. This is just an evaluation of the class that you are participating in. Any information that you provide will be kept confidential.

If you have any queries, or would like further information, please contact Tracey Irving:

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## **Appendix B**

### **Antenatal Education and Childbirth Experience** **Research Information Sheet**

This research will explore the effects of some different kinds of activities and information in antenatal classes. We will look at whether the way in which antenatal education is provided has an effect on experiences of pregnancy and childbirth. We are also interested in participants' overall impressions of the antenatal classes.

If you choose to participate in the research, you will be asked to complete a brief questionnaire (which should only take 10-15 mins) at the first and last antenatal classes (during class). You will be asked to complete the final questionnaire approximately one month following the birth of your baby (online or on paper – whichever you prefer). We will ask you questions about how you felt during the pregnancy and birth, and about your overall experience of childbirth. We will also ask for your feedback about the antenatal classes. You are not required to answer any questions if you don't want to.

Both mothers and birth partners are welcome to participate in the research.

Your participation is voluntary and you can withdraw at any time. Whether or not you participate in the research will not affect what happens in your childbirth education class. This is just an evaluation of the class that you are participating in. Any information that you provide will be kept confidential.

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## Appendix C

### CONSENT FORM

A completed copy of this form should be retained by both the researcher and the participant.

**Research Project:**      **Antenatal Education and Childbirth Experience**

Please complete the following checklist. Tick (✓) the appropriate box for each point.	YES	NO
1. I have read the Participant Information Sheet (or it has been read to me) and I understand it.		
2. I have been given sufficient time to consider whether or not to participate in this study		
3. I am satisfied with the answers I have been given regarding the study and I have a copy of this consent form and information sheet		
4. I understand that taking part in this study is voluntary (my choice) and that I may withdraw from the study at any time without penalty		
5. I have the right to decline to participate in any part of the research activity		
6. I know who to contact if I have any questions about the study in general.		
7. I understand that the information supplied by me could be used in future academic publications.		
I understand that my participation in this study is confidential and that no material, which could identify me personally, will be used in any reports on this study.		
I wish to receive a copy of the findings		

**Declaration by participant:**

I agree to participate in this research project and I understand that I may withdraw at any time. If I have any concerns about this project, I may contact the convenor of the Psychology Research and Ethics Committee (Dr Rebecca Sargisson, phone 07 837 9580, email: [rebecca.sargisson@waikato.ac.nz](mailto:rebecca.sargisson@waikato.ac.nz))

Participant's name (Please print):

Signature:	Date:
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**Declaration by member of research team:**

I have given a verbal explanation of the research project to the participant, and have answered the participant's questions about it. I believe that the participant understands the study and has given informed consent to participate.

Researcher's name (Please print):

Signature:	Date:
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## Appendix D

### **Antenatal Education and Childbirth Experience Questionnaire<sup>1</sup>**

Thank you for agreeing to take part in this research which will explore your experience of antenatal education classes and childbirth. Your feedback is very important as it will be used to help us understand how antenatal classes can provide the most valuable education for you during this amazing journey of pregnancy and childbirth. Please be assured that all responses you provide will be kept strictly confidential.

1. What is your age? \_\_\_\_\_<sup>2</sup>
  
2. Which ethnic group do you belong to?
  - ☐ New Zealand European
  - ☐ Māori
  - ☐ Samoan
  - ☐ Cook Island Māori
  - ☐ Tongan
  - ☐ Niuean
  - ☐ Samoan
  - ☐ Chinese
  - ☐ Indian
  - ☐ Other European
  - ☐ Other (such as Dutch, Japanese, Tokelauan) – please state: \_\_\_\_\_
  
3. What is your gender?
  - ☐ Male
  - ☐ Female
  - ☐ Other
  
4. How many biological children do you have?
  - ☐ 0
  - ☐ 1
  - ☐ 2 or more
  
5. What is the highest level of education you have completed?
  - ☐ No formal educational qualifications
  - ☐ High school/secondary diploma  
Please specify: \_\_\_\_\_
  - ☐ Some tertiary/university/undergraduate classes  
Please specify: \_\_\_\_\_
  - ☐ Tertiary/university/undergraduate degree  
Please specify: \_\_\_\_\_
  - ☐ Tertiary/university graduate-level degree  
Please specify: \_\_\_\_\_
  
6. Have you ever attended an antenatal class before?
  - ☐ Yes
  - ☐ No

<sup>1</sup> This marked the beginning of the pre-intervention questionnaire for all participants.

<sup>2</sup> These demographic questions (1-6) were included in the pre-intervention questionnaires for all participants, both intervention and comparison groups, in identical form.

Next there are some questions about your feelings and expectations about the birth and your baby.<sup>3</sup>

Please read each statement and tick the box which indicates how much the statement applies to you.

		Not at all	Some-what	Moderately	Very much
1.	I am confident of having a normal childbirth				
2.	I think my labour and delivery will go normally				
3.	I have a lot of fear regarding the health of my baby				
4.	I am worried that the baby could be abnormal				
5.	I am afraid that I will be harmed during delivery				

		Never	Some-times	Most of the time	Almost always
6.	I am concerned (worried) about how the baby is growing and developing inside me				
7.	I am concerned (worried) about losing the baby				
8.	I am concerned (worried) about having a hard or difficult labour and delivery				
9.	I am concerned (worried) about taking care of a new baby				
10.	I am concerned (worried) about developing medical problems during my pregnancy				

<sup>3</sup> These pregnancy-related anxiety questions (1-10) were included in the pre- and post-intervention questionnaires for mothers only in both intervention and comparison groups.

Next there are some questions about your feelings and expectations about the birth and your baby.<sup>4</sup>

Please read each statement and tick the box which indicates how much the statement applies to you.

		Not at all	Some-what	Moderately	Very much
1.	I am confident of my partner having a normal childbirth				
2.	I think the labour and delivery will go normally				
3.	I have a lot of fear regarding the health of the baby				
4.	I am worried that the baby could be abnormal				
5.	I am afraid that my partner will be harmed during delivery				

		Never	Some-times	Most of the time	Almost always
6.	I am concerned (worried) about how the baby is growing and developing				
7.	I am concerned (worried) about my partner losing the baby				
8.	I am concerned (worried) about my partner having a hard or difficult labour and delivery				
9.	I am concerned (worried) about taking care of a new baby				
10.	I am concerned (worried) about my partner developing medical problems during her pregnancy				

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<sup>4</sup> These pregnancy-related anxiety questions (1-10) were included in the pre- and post-intervention questionnaires for fathers only in both intervention and comparison groups.

Now we are going to ask some questions about how you have been feeling lately.<sup>5</sup>

Please read each statement and tick the box which indicates how much the statement applied to you **over the past week**. There are no right or wrong answers. Do not spend too much time on any statement.

For office use

		Never	Some times	Often	Almost Always			
1.	I found it hard to wind down							
2.	I was aware of dryness of my mouth							
3.	I couldn't seem to experience any positive feeling at all							
4.	I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion)							
5.	I found it difficult to work up the initiative to do things							
6.	I tended to over-react to situations							
7.	I experienced trembling (e.g. in the hands)							
8.	I felt that I was using a lot of nervous energy							
9.	I was worried about situations in which I might panic and make a fool of myself							
10.	I felt that I had nothing to look forward to							
11.	I found myself getting agitated							
12.	I found it difficult to relax							
13.	I felt down-hearted and blue							
14.	I was intolerant of anything that kept me from getting on with what I was doing							
15.	I felt I was close to panic							
16.	I was unable to become enthusiastic about anything							
17.	I felt I wasn't worth much as a person							
18.	I felt that I was rather touchy							
19.	I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat)							
20.	I felt scared without any good reason							
21.	I felt that life was meaningless							

<sup>5</sup> These DASS-21 questions were included in pre-, post-, and follow-up questionnaires for all participants (both intervention and comparison groups) in identical form.

This final section has some questions about your day to day experiences.<sup>6</sup>

Please read each statement and tick the box which best indicates what is generally true for you. For example, if you think a statement is sometimes true of you, tick the 'sometimes true' box.

		Never or very rarely true	Rarely true	Some- times true	Often true	Very often or always true
1.	When I take a shower or a bath, I stay alert to the sensations of water on my body					
2.	I'm good at finding words to describe my feelings					
3.	I don't pay attention to what I'm doing because I'm daydreaming, worrying or otherwise distracted					
4.	I believe some of my thoughts are abnormal or bad and I shouldn't think that way					
5.	When I have distressing thoughts or images, I "step back" and am aware of the thought or image without getting taken over by it					
6.	I notice how foods and drinks affect my thoughts, bodily sensations, and emotions					
7.	I have trouble thinking of the right words to express how I feel about things					
8.	I do jobs or tasks automatically without being aware of what I'm doing					
9.	I think some of my emotions are bad or inappropriate and I shouldn't feel them					
10.	When I have distressing thoughts or images I am able just to notice them without reacting					
11.	I pay attention to sensations, such as the wind in my hair or sun on my face					
12.	Even when I'm feeling terribly upset I can find a way to put it into words					
13.	I find myself doing things without paying attention					
14.	I tell myself I shouldn't be feeling the way I'm feeling					
15.	When I have distressing thoughts or images I just notice them and let them go					

<sup>6</sup> These FFMQ-15 questions were included in pre-, post-, and follow-up questionnaires for all participants (both intervention and comparison groups) in identical form.

This final section has a few questions about mindfulness.<sup>7</sup>

1. Have you ever practiced mindfulness meditation?
  - ☐ Yes → go to 2
  - ☐ No → this is the end of the questionnaire
  
2. On average, over the past six months, how often did you practice mindfulness meditation?
  - ☐ Daily
  - ☐ Most days
  - ☐ 2-3 times per week
  - ☐ Once a week
  - ☐ Occasionally
  - ☐ Once a month or less
  
3. What was the average length of time for each practice?
  - ☐ 5-10 minutes
  - ☐ 15-25 minutes
  - ☐ 30 minutes or more

*This is the end of the questionnaire. Thank you for your participation!*

---

<sup>7</sup> These questions (1-3) were included in the pre-intervention questionnaires for the intervention groups only.



## **Antenatal Education and Childbirth Experience Questionnaire<sup>8</sup>**

Thank you for continuing to take part in this research which explores your experience of antenatal education classes and childbirth. Please be assured that all responses you provide will be kept strictly confidential.

First, there are some questions about your overall satisfaction with the antenatal classes.<sup>9</sup>

Please read each statement and tick the box which best indicates what is generally true for you. For example, if you think a statement is sometimes true of you, tick the 'sometimes true' box.

		Not at all	Rarely	Some-times	Mostly	Very much
1.	I felt welcome in the antenatal classes					
2.	I felt comfortable in the antenatal classes					
3.	I felt I received the information I needed					
4.	The classes were what I expected					
5.	Overall, I was satisfied with the antenatal classes					

What did you like most about the antenatal classes?

Answer:

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What did you like least about the antenatal classes?

Answer:

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Do you have any other comments or suggestions about the antenatal classes? <sup>10</sup>

Answer:

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<sup>8</sup> This marked the beginning of the post-intervention questionnaires for all participants.

<sup>9</sup> These antenatal class satisfaction questions were included in post-intervention questionnaires for all participants (both intervention and comparison groups) in identical form.

<sup>10</sup> This section was followed by the pregnancy-related anxiety, DASS-21, and FFMQ-15 questions (as set out previously) in all post-intervention questionnaires (both intervention and comparison groups).

This final section has some questions about mindfulness.<sup>11</sup>

Tick the box beside the answer which best represents your response to the question.

1. How appropriate do you think mindfulness is as an addition to antenatal classes?

- ☐ Not at all appropriate
- ☐ Not very appropriate
- ☐ Reasonably appropriate
- ☐ Very appropriate

Comments: \_\_\_\_\_  
\_\_\_\_\_

2. How many of the six mindfulness sessions did you stay for?

- ☐ 0-1
- ☐ 2-3
- ☐ 4-5
- ☐ 6

3. How comfortable were you practicing mindfulness meditation in class?

- ☐ Not at all comfortable
- ☐ Not very comfortable
- ☐ Reasonably comfortable
- ☐ Very comfortable

Comments: \_\_\_\_\_  
\_\_\_\_\_

4. How much did you enjoy the mindfulness exercises in class?

- ☐ Not at all
- ☐ Not very much
- ☐ Somewhat
- ☐ Very much

Comments: \_\_\_\_\_  
\_\_\_\_\_

5. Overall, how satisfied were you with the mindfulness exercises in class?

- ☐ Not at all satisfied
- ☐ Not very satisfied
- ☐ Reasonably satisfied
- ☐ Very satisfied

Comments: \_\_\_\_\_  
\_\_\_\_\_

---

<sup>11</sup> These questions about mindfulness (1-16) were included in the post-intervention questionnaires for the intervention group only.

6. Did you practice mindfulness meditation at times other than in antenatal class?

- ☐ Yes → go to 7
- ☐ No → go to 11

7. On average, how many times per week did you meditate (other than in class)?

- ☐ 1-3
- ☐ 4-6
- ☐ 7 or more

8. What was the average length of time for each meditation practice?

- ☐ 5-10 minutes
- ☐ 15-25 minutes
- ☐ 30 minutes or more

9. Did you meditate with someone else?

- ☐ Yes, always → go to 10
- ☐ Yes, sometimes → go to 10
- ☐ No → go to 11

10. Who did you meditate with?

- ☐ The person who attended antenatal class with me
- ☐ Someone else

11. Did you download any meditation apps?  
For example, Mind the Bump, Headspace, Breathe

- ☐ Yes → go to 12
- ☐ No → go to 13

12. What app/s did you download?

---

13. Did you access any online or other resources (e.g. books) about mindfulness?

- ☐ Yes → go to 14
- ☐ No → go to 15

14. What resource/s did you access?

---

15. Do you think that learning about mindfulness has given you any skills that you can use in the future? If yes, what are they? For example, being more present, worrying less, being less reactive, connecting more with your partner/baby, etc.

- ☐ Yes  
☐ No

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

16. Do you have any other comments or suggestions about mindfulness in antenatal classes?

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

*This is the end of the questionnaire. Thank you for your participation!*

## **Antenatal Education and Childbirth Experience Questionnaire**<sup>12</sup>

Congratulations on the arrival of your new baby!

Thank you for continuing to take part in this research which explores your experience of antenatal education classes and childbirth. Please be assured that all responses you provide will be kept strictly confidential.

The purpose of this first section of the questionnaire is to learn about how you experienced childbirth.<sup>13</sup>

*Tick the box below the response choice that best corresponds to your opinion.*

1. Labour and birth went as I had expected.

Totally agree	Mostly agree	Mostly disagree	Totally disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. I felt strong during labour and birth.

Totally agree	Mostly agree	Mostly disagree	Totally disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. I felt scared during labour and birth.

Totally agree	Mostly agree	Mostly disagree	Totally disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. I felt capable during labour and birth.

Totally agree	Mostly agree	Mostly disagree	Totally disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. I was tired during labour and birth.

Totally agree	Mostly agree	Mostly disagree	Totally disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. I felt happy during labour and birth.

Totally agree	Mostly agree	Mostly disagree	Totally disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

---

<sup>12</sup> This marked the beginning of the follow-up questionnaires for all participants.

<sup>13</sup> These childbirth experience questions (1-26) were included in the follow-up questionnaires for mothers only, in both intervention and comparison groups.

7. I have many positive memories from childbirth.

Totally agree

Mostly agree

Mostly disagree

Totally disagree

☐
☐
☐
☐

8. I have many negative memories from childbirth.

Totally agree

Mostly agree

Mostly disagree

Totally disagree

☐
☐
☐
☐

9. Some of my memories from childbirth make me feel depressed.

Totally agree

Mostly agree

Mostly disagree

Totally disagree

☐
☐
☐
☐

10. I felt I could have a say whether I could be up and about or lie down.

Totally agree

Mostly agree

Mostly disagree

Totally disagree

☐
☐
☐
☐

11. I felt I could have a say in deciding my birth position.

Totally agree

Mostly agree

Mostly disagree

Totally disagree

☐
☐
☐
☐

12. I felt I could have a say in the choice of pain relief.

Totally agree

Mostly agree

Mostly disagree

Totally disagree

☐
☐
☐
☐

13. My midwife devoted enough time to me.

Totally agree

Mostly agree

Mostly disagree

Totally disagree

☐
☐
☐
☐

14. My midwife devoted enough time to my partner.

Totally agree

Mostly agree

Mostly disagree

Totally disagree

☐
☐
☐
☐

15. My midwife kept me informed about what was happening during labour and birth.

Totally agree	Mostly agree	Mostly disagree	Totally disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

16. My midwife understood my needs.

Totally agree	Mostly agree	Mostly disagree	Totally disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17. I felt very well cared for by my midwife.

Totally agree	Mostly agree	Mostly disagree	Totally disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18. My impression of the team's medical skills made me feel secure.

Totally agree	Mostly agree	Mostly disagree	Totally disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

19. I felt that I handled the situation well.

Totally agree	Mostly agree	Mostly disagree	Totally disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

*Indicate your opinion by marking 'X' on the line between the two end-points.*

20. As a whole, how painful did you feel the childbirth was?

●	—————	●
No pain		Worst imaginable pain

21. As a whole, how much control did you feel you had during childbirth?

●	—————	●
No control		Complete control

22. As a whole, how secure did you feel during childbirth?

●	—————	●
Not at all secure		Completely secure

*Please tick the circle beside the response most applicable for you.*

23. What strategies did you use to cope with pain during labour?

- ☐ Massage/acupressure
- ☐ Breathing
- ☐ Visualisation
- ☐ Mindfulness/meditation
- ☐ Movement
- ☐ Repositioning
- ☐ Medication – Please state: \_\_\_\_\_
- ☐ Other – Please state: \_\_\_\_\_

Comments: \_\_\_\_\_  
 \_\_\_\_\_

24. Where did you plan to give birth to your baby?

- ☐ Hospital
- ☐ Birthing centre
- ☐ Home
- ☐ Other place: \_\_\_\_\_

25. Where did you give birth to your baby?

- ☐ Hospital
- ☐ Birthing centre
- ☐ Home
- ☐ Other place: \_\_\_\_\_

26. What was most useful from the antenatal class for your overall birth experience?

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Additional comments:<sup>14</sup> \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

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<sup>14</sup> This section was followed by the DASS-21 and FFMQ-15 questions (as set out previously) in post-intervention questionnaires (both intervention and comparison groups).



Thank you for continuing to take part in this research which explores your experience of antenatal education classes and childbirth. Please be assured that all responses you provide will be kept strictly confidential.

The purpose of this first section of the questionnaire is to learn about how you experienced childbirth.<sup>15</sup>

*Tick the box below the response choice that best corresponds to your opinion.*

1. Labour and birth went as I had expected.

Totally agree	Mostly agree	Mostly disagree	Totally disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. I felt scared during labour and birth.

Totally agree	Mostly agree	Mostly disagree	Totally disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. I felt happy during labour and birth.

Totally agree	Mostly agree	Mostly disagree	Totally disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. I have many positive memories from childbirth.

Totally agree	Mostly agree	Mostly disagree	Totally disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. I have many negative memories from childbirth.

Totally agree	Mostly agree	Mostly disagree	Totally disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. Some of my memories from childbirth make me feel depressed.

Totally agree	Mostly agree	Mostly disagree	Totally disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

---

<sup>15</sup> These childbirth experience questions (1-13) were included in the follow-up questionnaires for fathers only, in both intervention and comparison groups.

7. The midwife devoted enough time to me.

Totally agree

Mostly agree

Mostly disagree

Totally disagree

☐
☐
☐
☐

8. The midwife devoted enough time to my partner.

Totally agree

Mostly agree

Mostly disagree

Totally disagree

☐
☐
☐
☐

9. The midwife kept me informed about what was happening during labour and birth.

Totally agree

Mostly agree

Mostly disagree

Totally disagree

☐
☐
☐
☐

10. My impression of the team's medical skills made me feel secure.

Totally agree

Mostly agree

Mostly disagree

Totally disagree

☐
☐
☐
☐

11. I felt that I handled the situation well.

Totally agree

Mostly agree

Mostly disagree

Totally disagree

☐
☐
☐
☐

*Indicate your opinion by marking 'X' on the line between the two end-points.*

12. As a whole, how secure did you feel during childbirth?



Not at all secure

Completely secure

13. What was most useful from the antenatal class for your overall birth experience?

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Additional comments:<sup>16</sup> \_\_\_\_\_

\_\_\_\_\_

<sup>16</sup> This section was followed by the DASS-21 and FFMQ-15 questions (as set out previously) in all post-intervention questionnaires (both intervention and comparison groups).

This final section has a few questions about meditation.<sup>17</sup>

1. Have you ever practiced any form of meditation?
  - ☐ Yes → go to 2
  - ☐ No → this is the end of the questionnaire
  
2. On average, over the past six months, how often did you practice meditation?
  - ☐ Daily
  - ☐ Most days
  - ☐ 2-3 times per week
  - ☐ Once a week
  - ☐ Occasionally
  - ☐ Once a month or less
  
3. What was the average length of time for each practice?
  - ☐ 5-10 minutes
  - ☐ 15-25 minutes
  - ☐ 30 minutes or more

*This is the end of the questionnaire. Thank you for your participation!*

---

<sup>17</sup> This final section (questions 1-3) was included in follow-up questionnaires for comparison group participants only.

This final section has some questions about mindfulness.<sup>18</sup>

1. Have you practiced mindfulness meditation since completing antenatal classes?

- ☐ Yes → go to 2  
☐ No → go to 4

2. On average, how many times per week did you meditate?

- ☐ 1-3  
☐ 4-6  
☐ 7 or more

3. What was the average length of time for each meditation practice?

- ☐ 5-10 minutes  
☐ 15-25 minutes  
☐ 30 minutes or more

4. Did you use any mindfulness strategies during the birth/labour process?

- ☐ Yes → go to 5  
☐ No → go to 7

5. What strategies did you use?

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---

6. How easy was it for you to practice mindfulness during the birth/labour process?

- ☐ Not at all easy  
☐ Not very easy  
☐ Reasonably easy  
☐ Very easy

Comments: 

---

---

7. Do you think that mindfulness is something that you will use in the future?

- ☐ Yes  
☐ No  
☐ Maybe

Comments: 

---

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<sup>18</sup> These mindfulness questions (1-8) were included in all follow-up questionnaires for all participants in the intervention group only.

8. Do you have any other comments about using mindfulness during the labour/birth process?

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

*This is the end of the questionnaire. Thank you for your participation!*

## Appendix E

### Week One

#### What is Mindfulness?

Mindfulness has been defined as:

*“Paying attention in a particular way:  
on purpose, in the present moment, and nonjudgmentally.”<sup>1</sup>*

There are two forms of mindfulness practice – formal and informal<sup>2</sup>. The formal practice is commonly known as meditation. Informal practice is when you bring your non-judgemental attention to things you do in everyday life. This can be an activity as simple as showering or brushing your teeth.

For a more detailed explanation of mindfulness and the benefits of practicing mindfulness, see:

<http://mrsmindfulness.com/what-is-mindfulness/><sup>3</sup>

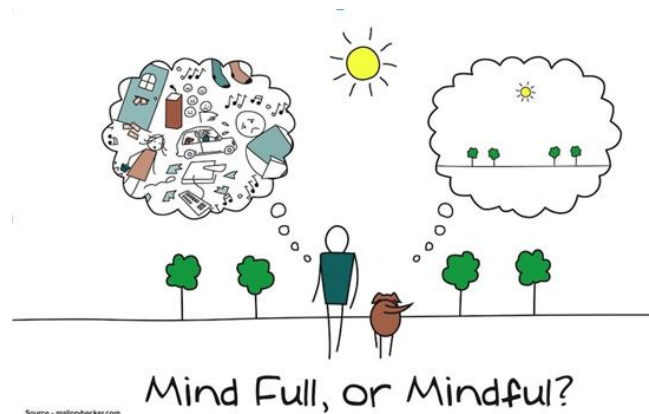
#### Friendly Scientist Metaphor<sup>4</sup>:

Observe your thoughts/emotions/sensations as if you are a friendly scientist discovering something new. As a curious scientist you are simply studying them – not trying to destroy, avoid, or interfere with them in any way. You are just observing them with child-like curiosity, investigating them without judgement.

#### Raisin Meditation:

To access the raisin meditation, go to:

<http://www.mbsrtraining.com/mindfully-eating-a-raisin-exercise/><sup>5</sup>



6

#### References

1. Kabat-Zinn, J. (1994). *Wherever you go, there you are: Mindfulness meditation in everyday life*. New York: Hyperion.
- 2-3. Mrs Mindfulness. (2014). *What is mindfulness? (And what does it mean to you?)* Retrieved from <http://mrsmindfulness.com>
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5. MBSR Training Online. (2018). *Mindfully eating a raisin*. Retrieved from <http://www.mbsrtraining.com>
6. Soul Fields. (2018). Retrieved from <https://soulflds.wordpress.com/2014/12/07/image-mind-full-or-mindful/>

## Some Mindfulness Meditation Resources

### Mindfulness Apps:

Mind the Bump (specifically for pregnancy)  
Evenflow  
Headspace  
Stop, Breathe and Think  
10% Happier

### Websites:

<http://mindfulmotherhood.org>  
<http://www.mindfulbirthing.org>  
<http://mrsmindfulness.com>  
<https://www.mindful.org/meditation/mindfulness-getting-started>

### Books:

*Mindful birthing: Training the mind, body, and heart for childbirth and beyond* by Nancy Bardacke  
*Mindful motherhood: Practical tools for staying sane during pregnancy and your child's first year* by Cassandra Vieten  
*Mindfulness: A practical guide to finding peace in a frantic world* by Mark Williams and Danny Penman  
*Wherever you go, there you are: Mindfulness meditation in every day life* by Jon Kabat-Zinn  
*Mindsight* by Dan Siegel

### YouTube Clips:

Learn meditation in 5 minutes with Dan Harris  
<https://www.youtube.com/watch?v=LKZ9sN3nL2c> (5 min)  
What is mindfulness? By Jon Kabat-Zinn  
<https://www.youtube.com/watch?v=HmEo6RI4Wvs> (5 min)  
A different approach to pain management: Mindfulness meditation by Fadel Zeidan  
<https://www.youtube.com/watch?v=OLQJJDrbj6Q> (18 min)

### Ted Talks:

[https://www.ted.com/talks/andy\\_puddicombe\\_all\\_it\\_takes\\_is\\_10\\_mindful\\_minutes#t-550120](https://www.ted.com/talks/andy_puddicombe_all_it_takes_is_10_mindful_minutes#t-550120) (10 min)  
[https://www.ted.com/talks/judson\\_brewer\\_a\\_simple\\_way\\_to\\_break\\_a\\_bad\\_habit](https://www.ted.com/talks/judson_brewer_a_simple_way_to_break_a_bad_habit) (9 min)

### Links to Free Guided Meditations:

<http://franticworld.com/free-meditations-from-mindfulness>  
<http://marc.ucla.edu/mindful-meditations>  
<http://www.freemindfulness.org/download>

### Free Online Courses:

<https://www.monash.edu/health/mindfulness>  
<https://palousemindfulness.com>

## Week Two

### **Sky and Weather Metaphor<sup>1</sup>:**

We can think of the observing mind as being like the sky. Thoughts, memories, feelings, and emotions are like the weather. The weather is continuously changing. Sometimes it is clear and sunny, at other times it is stormy and grey, but the sky behind it is always the same. It doesn't matter how stormy the weather is, the sky remains clear and cannot be damaged in any way. Cyclones and hurricanes can cause massive destruction on land, but they cannot hurt the sky. Sometimes our thoughts and feelings are bleak and stormy, but our observing mind remains the same. Thoughts and emotions, like the weather, are always changing, but our mind stays clear and constant.

### **Body Scan Meditation:**

To access a body scan meditation, go to:

<https://www.mindful.org/beginners-body-scan-meditation><sup>2</sup>



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### **References**

1. ACT Mindfully. (2013). *Free resources*. Retrieved from <https://www.actmindfully.com.au>
2. Mindful. (2018). *Healthy mind, healthy life*. Retrieved from <https://www.mindful.org>
3. Sketches in Stillness. (2018). Retrieved from <http://sketchesinstillness.tumblr.com/>



## Week Three

### Quicksand/Struggle Switch Metaphor<sup>1</sup>:

Have you ever seen an old western movie where someone falls into quicksand? The more they struggle, the more they get sucked under. If you ever fall into quicksand, don't struggle! The best thing to do is lean back, spread your arms and lie as still as you can, floating on the surface. This isn't an easy thing to do, because it seems counterintuitive, but if you struggle you'll end up getting sucked under. While floating on quicksand is not fun, it's better than drowning in it!

The same idea applies with difficult thoughts and emotions. The more we struggle with them, the more they consume us. To understand how this works, imagine that you have a switch on the back of your mind which we'll call the "struggle switch." When our switch is on, we tend to struggle against any difficult thoughts and painful emotions or sensations. We try to avoid or escape from our discomfort, which only amplifies it.

For example, if we feel anxious and our struggle switch is on, then we might feel unhappy about being anxious: "I'm so tired of feeling this way, what is wrong with me?" Or we might feel angry about our anxiety: "Oh no, not again! How dare they do that to me!" Or guilty: "Why do I always let myself get worked up like this?" Or, we might feel more anxious about our anxiety: "What am I going to do? All this anxiety must be bad for my health." We might even feel a combination of all of those things. These secondary emotions are all unhelpful, distressing, and exhausting. So, we can end up in a vicious cycle of being more anxious, depressed or angry! With our struggle switch on, emotions become amplified and stuck.

However, if our struggle switch is off, we don't struggle with emotions that arise. If we are feeling anxious, it may be uncomfortable and unwanted, but it's nothing we can't handle. With our struggle switch off, anxiety is free to arise and then fall away. We don't use valuable time and energy struggling with anxiety, but we just allow it to be. Once we stop struggling, our emotions are free to move.

### Ice Practice Meditation<sup>2</sup>:

To access an ice practice meditation, go to:

<https://www.mindfueldaily.com/livewell/mindfulness-meditation-and-pain-management>



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### References

1. ACT Mindfully. (2013). *Free resources*. Retrieved from <https://www.actmindfully.com.au>
2. Mind Fuel Daily. (n.d.). *Mindfulness meditation and pain management*. Retrieved from <https://www.mindfueldaily.com/livewell/mindfulness-meditation-and-pain-management>
3. Pinterest. (2018). Retrieved from <https://www.pinterest.nz/pin/138204282290600820/>

## Week Four

### **Your Mind is Like a Radio Metaphor<sup>1</sup>:**

We can think of our mind as like a radio, always playing in the background. Our radio is often playing the *"Doom and Gloom Show"* broadcasting negative stories about things that happened in the past (*"You made a real mess of that!"*) or the future (*"You'll never be able to do it!"*). It updates us regularly about things that are wrong with us (*"You're useless!"*). Sometimes it broadcasts good news, but not very often. If we're always tuned in to our radio, listening and (worse still) actually believing what we hear, then we increase our risk of anxiety and distress.

Unfortunately, we can't turn off our radio. Even very experienced meditators are unable to do this. Occasionally it might pause of its own accord for a short period, but we cannot intentionally make it stop (unless we interfere with it using brain surgery or substance abuse). Generally, the more we try to turn our radio off, the louder it plays. But there is something we can do to change that.

Have you ever heard a radio playing in the background but taken no notice of it because you were so focussed on what you were doing? This is what we can do with our thoughts. When we understand that thoughts are simply words or mental events, we can treat them like background noise. That is, we can simply notice thoughts coming and going, without becoming caught up in them or upset by them. If an unpleasant thought arises, you just notice it, without focussing on it, thank your mind, and continue to focus on what you're doing.

If your radio mind is playing something helpful, then you can pay attention. If it is playing something unhelpful, then you can choose not to listen and instead remain focussed on the present. This contrasts with the idea of positive thinking, where you have another radio station *"Radio Happy and Cheerful"* playing alongside *"Radio Doom and Gloom,"* trying to drown it out. This approach makes it difficult to focus on what you're doing because there is too much background noise.

### **Sounds and Thoughts Meditation<sup>2</sup>:**

To access a sounds and thoughts meditation, go to:

<http://franticworld.com/free-meditations-from-mindfulness/>



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### **References**

1. ACT Mindfully. (2013). *Free resources*. Retrieved from <https://www.actmindfully.com.au>
2. Mindfulness: Finding peace in a frantic world. (2018). *Free meditations from mindfulness*. Retrieved from <http://franticworld.com/free-meditations-from-mindfulness/>
3. Pinterest. (2018). Retrieved from <https://www.pinterest.nz/pin/642325965573199333/>

## Week Five

### Two Countries at War Metaphor<sup>1</sup>:

Imagine living in small country which borders a very hostile neighbouring country. For a long time, there has been conflict between the two countries, due to differences in religious and political views. Your country sees its neighbour as a serious threat. There are three ways in which your country can relate to its neighbour.

The first and worst-case scenario is war, where one country attacks and the other retaliates. In this situation the people from both countries suffer (for example, in terms of lives lost, injuries, financial costs, and wellbeing).

Another possibility is that both countries agree to a temporary cease-fire, but without reconciliation. It is an improvement on the first scenario, but resentment still bubbles below the surface and both countries are on edge with ongoing concerns about war breaking out.

The third scenario is true peace. Both countries recognise their differences and accept them as they are. It doesn't get rid of your neighbouring country, and it doesn't mean that you agree with their political or religious views. You don't even have to like it or want it as your neighbour. But when you're not fighting each other, you can use your resources for the benefit of your people, rather than spending money on war.

The first possibility, war, is similar to how we struggle to rid ourselves of distressing thoughts and emotions. It's a fight that we can never win, and it uses a great deal of time and resources.

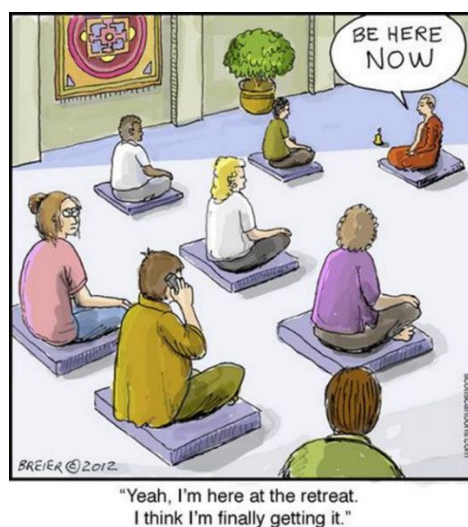
The second scenario, a ceasefire, is an improvement on war, but there are still many downsides. There's no moving forward, but rather a sense of reluctant tolerance and uncertainty of when things could deteriorate. You're left feeling helpless and stuck in an unpredictable environment.

The third possibility, peace, demonstrates genuine acceptance. Your country doesn't have to change its political views or convert to the religion of the other country. It doesn't have to want it there or like it. Differences are acknowledged and accepted, and your country no longer tries to change the other country's values and beliefs. It's the same with thoughts and feelings. You don't have to want or like unhelpful thoughts and emotions. But when you genuinely accept them, without trying to change or get rid of them, you can focus your time and attention on moving forward.

### Compassion Meditation<sup>2</sup>:

To access a compassion (loving-kindness) meditation, go to:

<https://www.mindful.org/a-loving-kindness-meditation-to-boost-compassion/>



### References

1. ACT Mindfully. (2013). *Free resources*. Retrieved from <https://www.actmindfully.com.au>
2. Mindful: Healthy mind, healthy life. (2018). *A loving-kindness meditation to boost compassion*. Retrieved from <https://www.mindful.org/a-loving-kindness-meditation-to-boost-compassion/>
3. Pinterest. (2018). Retrieved from <https://www.pinterest.nz/pin/430656783090907373/>

## Week Six

### **Chinese Finger Traps Metaphor<sup>1</sup>:**

Did you ever play with Chinese finger traps when you were a child? They are small tubes of woven bamboo. When you push both index fingers in (one into each end), you'll notice that when you go to pull them back out, the tube tightens around your fingers. The harder you pull your fingers, the more the tube contracts around them. The more you struggle, the more you become stuck in the trap.

Situations with pain and fear are similar to the Chinese finger trap. If we're feeling scared or we're in pain and become stuck in those feelings, attempting to struggle free just restricts our room to move even further and increases our suffering.

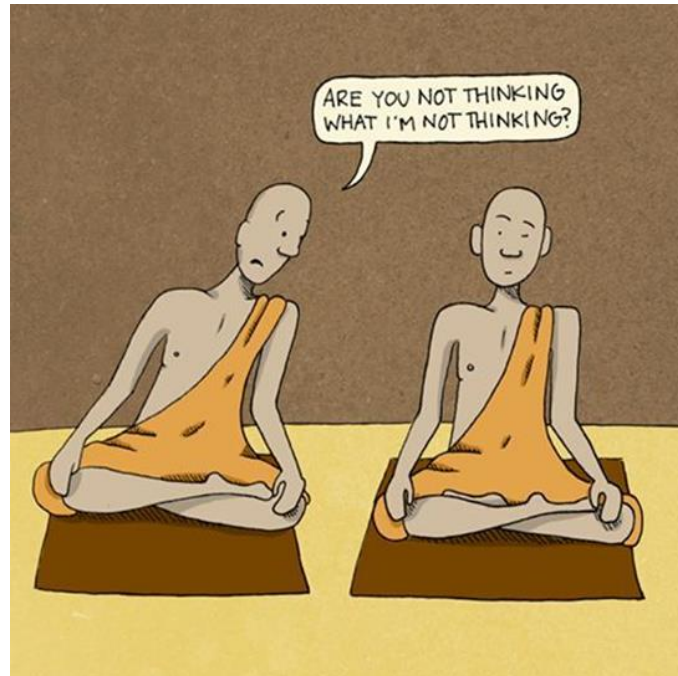
You'll notice that the only way to free your fingers from the trap is to push your fingers in, which makes the tube bigger and gives you some space. This is counter-intuitive, because your mind tells you that to get away you need to pull your fingers out.

With fear and pain, if we lean in and accept those feelings rather than trying to escape from them, it provides a bit of wiggle room. When we accept and let go of struggling against what we're experiencing, it gives us some space to make a choice about what to do next and allows room for new possibilities.

### **Mindfulness of Breath and Body Meditation<sup>2</sup>:**

To access a mindfulness of body and breath meditation, go to:

<http://franticworld.com/free-meditations-from-mindfulness/>



## **References**

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1. Portland Psychotherapy. (2018). *Chinese finger traps: What a novelty item can teach us about acceptance*. Retrieved from <https://portlandpsychotherapyclinic.com/2013/03/chinese-finger-traps-what-novelty-item-can-teach-us-about-acceptance/>
2. Mindfulness: Finding peace in a frantic world. (2018). *Free meditations from mindfulness*. Retrieved from <http://franticworld.com/free-meditations-from-mindfulness/>
3. Pinterest. (2018). Retrieved from <https://www.pinterest.nz/pin/642325965576446332/>

## Appendix F

### Mindfulness in Antenatal Classes Revised Curriculum

Week	Topic	Mindfulness activity
One	Tour of birth centre Pregnancy anatomy Labour and birth overview	Introduction to mindfulness and breathing
Two	Physiological labour and birth Labour support	Mindfulness ice practice
Three	Physiological labour and birth cont. Medical pain management	Body movement awareness
Four	Obstetric Intervention Breastfeeding Intro	Body scan meditation
Five	Breastfeeding Life with a newborn	Acceptance meditation 1
Six	Life with a newborn Transition into parenthood	Acceptance meditation 2